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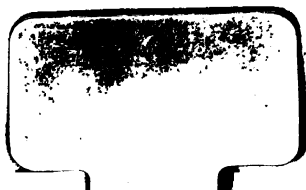
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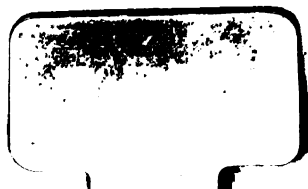
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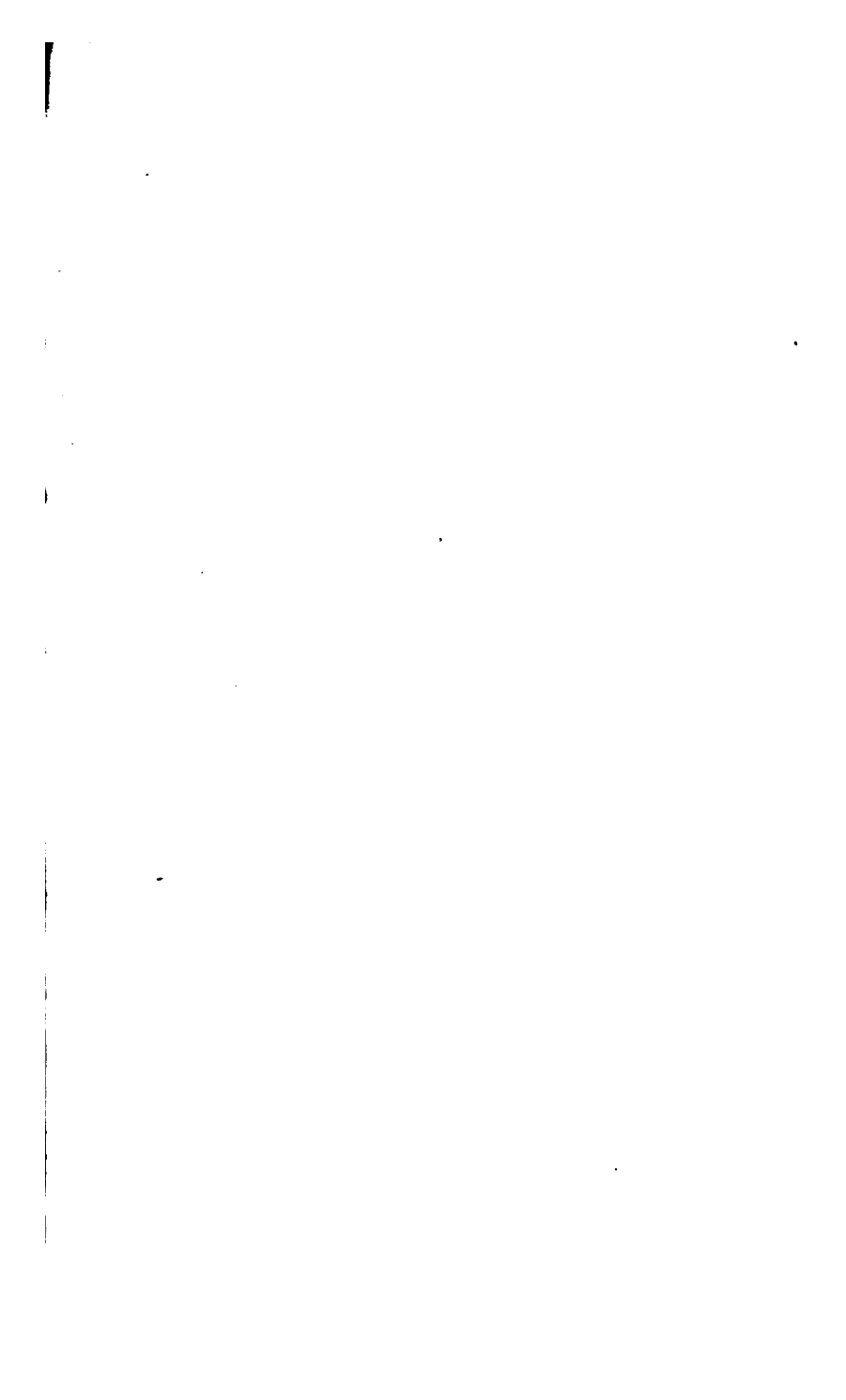


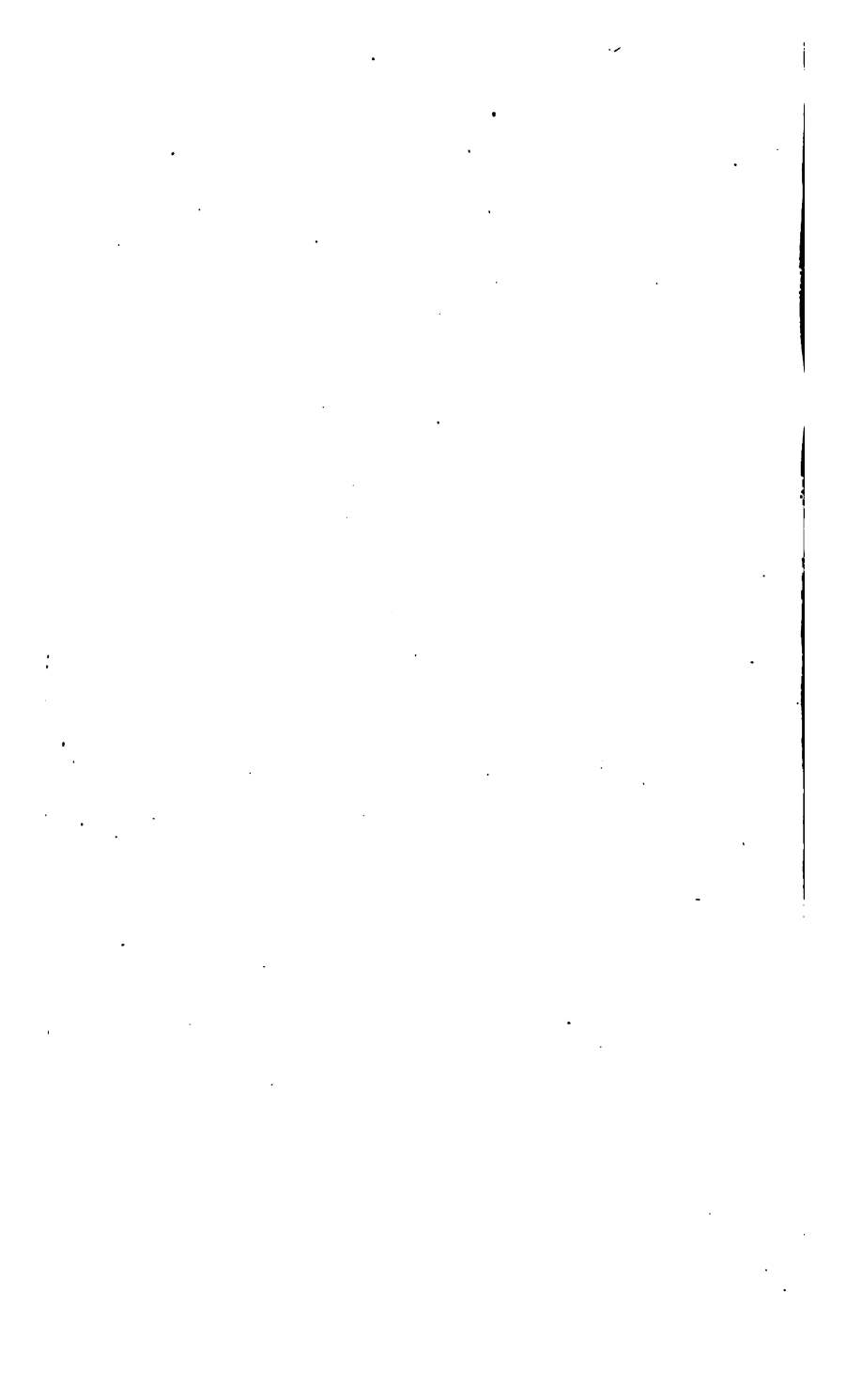
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A
MEDICAL
TOPOGRAPHY
OF
TUNBRIDGE WELLS;

ILLUSTRATING THE BENEFICIAL INFLUENCE OF ITS MINERAL WATERS,
CLIMATE, SOIL, ETC., IN RESTORING AND PRESERVING

HEALTH:

ACCOMPANIED WITH AN OUTLINE OF HYGIENE.

BY

ROBERT HUTCHINSON POWELL, M.B.—M.D.

MEMBER OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND;
FORMERLY MEMBER OF THE COMMITTEE OF THE SOUTH-EASTERN
MEDICAL AND SURGICAL ASSOCIATION, ETC.



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P R E F A C E.

THE principal object of the present little volume, is to give to the profession generally a knowledge of the *Medical Topography* of Tunbridge Wells. The advancement of medical science has shown, that many persons, variously indisposed, whose successful treatment at home is difficult, if not unattainable, are immediately benefited by removal to a more suitable climate. Moreover, it must not be forgotten, that man is a wonderful compound of mind and matter; the one acting, and reacting upon the other. A change, therefore, will be advantageous, to places where the attention is occupied with varied scenes, and different pursuits ; where

hope, taking the place of depression, is continually incited; and where the individual is removed from the perturbations sometimes attached to one's own home. Such being the case, it becomes every medical man, carefully to inquire, and properly estimate the sanitary relations of his own locality;—an investigation, which will often prove, as in the present instance, how near popular opinion approaches to truth.

The necessity of presenting at one view, and thoroughly understanding the medical relations of the climate of this locality, becomes apparent from the railway communication, which constitutes Tunbridge Wells a suburb of the metropolis; thus permitting many to make this beautiful place the residence of their families, whose professional, or business engagements require their presence in Town. It is, therefore, important that the medical advisers of all such, should have a full knowledge of the subject of which it is the design of the following pages to treat. It is hoped, that the points requiring

investigation, will be found concisely, yet effectively set forth. To insure this, the writer's personal researches, in conjunction with the kind information of several gentlemen of scientific acquirements—subsequently acknowledged—have been diligently conducted. Receiving as a fact, that “the general state of health in a town, may be inferred from the mortuary tables,” [Med. Chir. Rev., October, 1845,] the statistical section has been carefully deduced from all available sources, with a view of rendering the inferences from meteorological observations, nature of the soil, &c., as correct as possible.

The famous chalybeate of Tunbridge Wells has not been overlooked. It has been represented as a remedial agent admirably adapted to benefit a large class of invalids; some of those maladies in which it is indicated having been cursorily pointed out.

As it is presumed this little work would become, in some measure, a guide for the

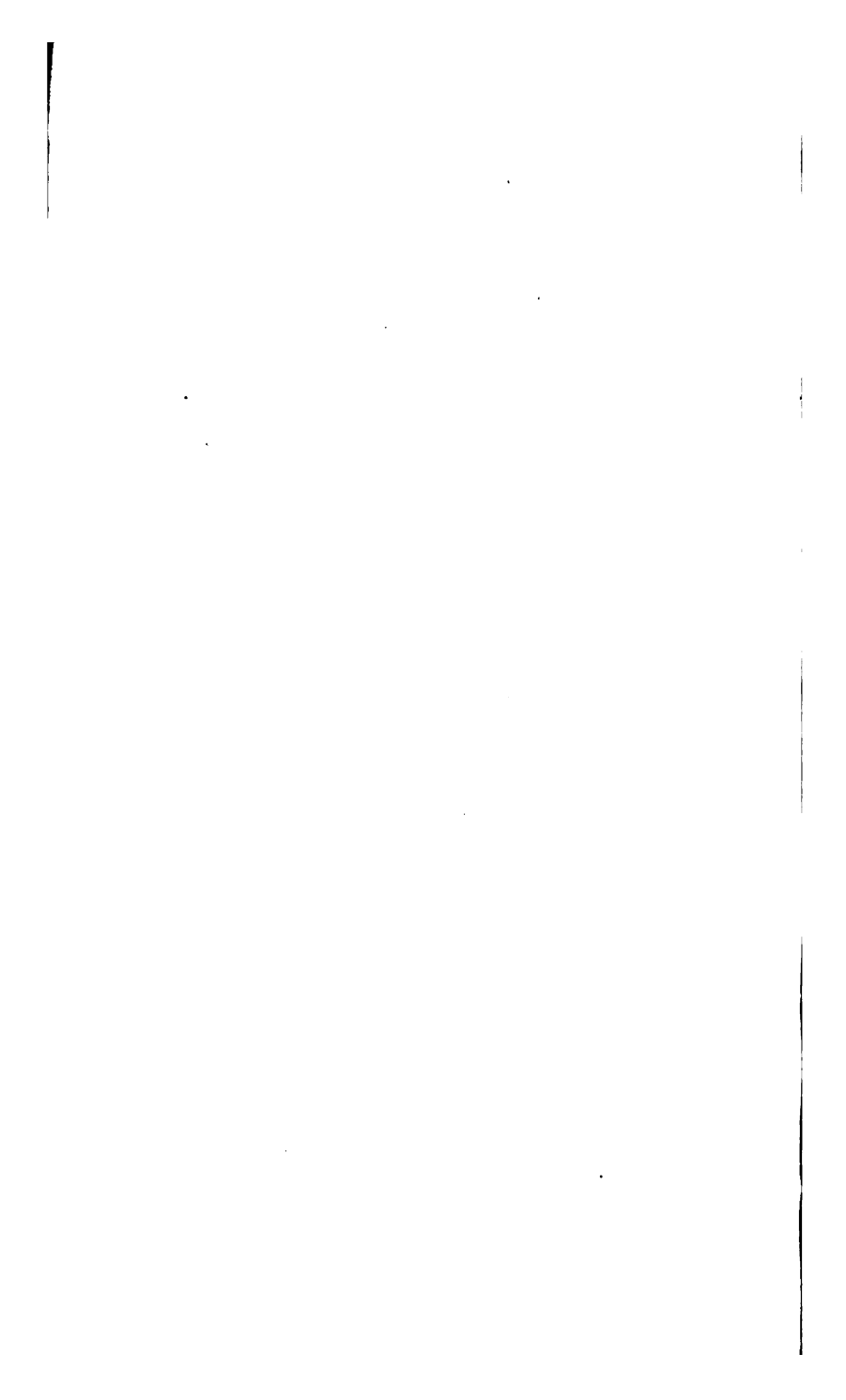
invalid, in the absence of one's medical adviser, the writer has been desirous to treat the subject popularly—as much as a scientific subject would admit—and at the same time *without disguise*; denoting the “shoals and quick-sands” to be avoided: if the latter object be attained, the writer will consider himself recompensed for his present undertaking.

The Divisions of Tunbridge Wells, now for the first time attempted, with directions for selecting a suitable residence, are matters of no small importance to the invalid; and the writer trusts, they will be found to possess more than an artificial or arbitrary basis, and to bear the test of experience. A brief sketch of other *hygiënic agents*,—DIET, EXERCISE, SLEEP, BATHING, CLOTHING,—has been annexed. But as concentration was the principal aim of the writer, it is hoped that the deficiencies of this epitome will be leniently received;—the extensive nature of these subjects, as well as active professional engagements, totally precluding a more detailed account.

To the inhabitants of Tunbridge Wells, a few suggestions are offered, which, in the opinion of the writer, would be adapted to its *continued* prosperity and advancement. The improvements are now in a fair way of completion, to which a prospectus of the present volume, (issued three months back,) originally called attention.

ROBERT HUTCHINSON POWELL.

ROCK LODGE, TUNBRIDGE WELLS,
June, 1846.



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They improve the state of the lymph and blood, and the energy of the vascular system ; augment the cohesion and firmness of all soft tissues and structures ; regulate and strengthen the functions which are actuated by the organic nerves ; elevate and fortify the irritability and sensibility ; and thus restore vital resistance and endurance to the frame, and vigor to the mind.”*

Chalybeate waters are characterized by not increasing the secretions ; occasionally, however, they act as diuretics, and aperients in certain states of the alimentary canal, as shewn by Dr. Saunders in the case of the Tunbridge chalybeate. They are more effectual when not sensibly perceived, a change being gradually induced, which eventually terminates in healthy action.

Having taken the above brief notice of mineral waters, I shall enter upon the more immediate object of this chapter—the chalybeate spring of Tunbridge Wells. This time-honoured well, now† exclusively used, is said to arise in the village of Speldhurst, and, gradually straining through the ferruginous sandstone chiefly forming the subsoil of this district, and moving in an upward direction, it finally emerges at the east end of

* Dr. Franz on Mineral Waters.

† There are several ferruginous springs in the neighbourhood which are not used at present.

the Parade, through three apertures at the bottom of a large marble basin. This reservoir has undergone various mutations, the basin and its apertures now in use being much corroded from the constant action of the carbonic acid contained in the water. It is protected by a cover at night, and great care is observed by the attendants to keep the basin and appendages perfectly clean. The quantity of water yielded varies with the season: in the month of August, Sir Charles Scudamore found the spring to discharge, in a minute, one quart and a fraction; in November, one quart; in March, one gallon and seven pints. The strength also varies with the supply, the chalybeate impregnation being less as the quantity of water increases.

It is probable that the spring ascends from a considerable depth,* from the uniformity of its temperature at all seasons: this is attributable to the gradual influence of summer and winter, extending to great depths, upon the earth.

The *properties* of the mineral water may be conveniently described under those of *physical*, *chemical*, and *medicinal*.

* It does not follow from the circumstance of the supply having been diminished on the sinking of Mr. Strange's well, not far distant from the chalybeate, that its source must be at no great depth from the surface, as in its gradual ascent, just before emerging, it must be liable to casual interruption in its course.

Of the former, namely, its *physical* properties.

The water is perfectly limpid and colourless ; its odour is perceptibly chalybeate, tasting palatable, fresh, and strongly marked with the peculiar *goût* of iron. The temperature of the water, at all seasons, is 50° Fah. ; on raising it to 68°, the water exhibits a few air bubbles adhering to the sides of the glass ; an iridescent pellicle floats on the surface after a few hours ; the water assumes an opalescent appearance in about six hours ; depositing, in the course of twenty-four hours, a yellow precipitate on the sides and bottom of the vessel, and losing entirely its tonic properties. This change takes place more rapidly by applying a heat of 212°. It is retarded, but not prevented, by occlusion from the atmosphere. On applying a heat of 140°, no change ensues in the water, except the disengagement of gaseous bubbles ; beyond this temperature it becomes turbid, and deposits brown flakes on cooling.

The specific gravity of the water is,

According to Dr. Babbington . . . 1.0014

“ Sir C. Scudamore . . . 1.1007

Being less than that of ordinary spring water.

The following tables exhibit the *chemical* properties of the spring ; shewing, the action of various chemical reagents, the inferences to be drawn from the changes produced by them, and the quantitative analysis of the water.

Table shewing that there are contained in half a wine pint, about :—

	Grains.
Protoxide of iron*	0.13
Chloride of calcium	0.09
Ditto of magnesium	0.02
Ditto of sodium	0.08
Sulphate of soda	0.09
Carbonate of lime	0.02
Oxide of manganese } minute portions	
Alumina }	
Silica, &c. }	

And of

	Cubic inches.
Carbonic acid gas	0.50
Nitrogen	0.17
Atmospheric air	0.17

In an imperial gallon of solid contents:—

	Grains.
Protoxide of iron	2.473
Chloride of calcium	1.848
Ditto of magnesium	0.348
Ditto of sodium	1.500
Sulphate of soda	1.764
Carbonate of lime	0.324
Oxide of manganese }	0.528
Alumina }	
Silica, &c. }	
Loss in processes	0.156
	<hr/> 9.216

* Sir Charles Scudamore appears to have estimated the amount of iron in the spring from the quantity of sesquioxide, without having made the requisite subtraction of a tenth for the oxygen gained by the iron in passing from the minimum to the maximum state of oxidation during its precipitation.

	Cubic inches.
Carbonic acid gas	9.66
Oxygen ditto	0.60
Nitrogen ditto	5.70
	<hr/>
Gaseous constituents of the imperial gallon	15.96

The water, at its natural temperature, contains of—

	Cubic inches.
Carbonic acid gas	9.66
When heated to 114°	7.58
	<hr/>
Loss by heat	2.08

The preceding tables give a concise view of Sir C. Scudamore's analysis of the Tunbridge* Chalybeate. I have repeated the essential part of, and varied this analysis, with the same results; having made such alterations as the improved state of science at present called for. The well-marked changes produced in the water by the tests for protoxide of iron at once shew the decided chalybeate impregnation.

The remarkable purity of the water assists the carbonic acid gas in perfectly dissolving the protoxide of iron. That a more intimate combination exists between the salt of iron and the water, than mere simple solution, is rendered probable from the water, admitting its temperature to be

* To avoid repetition, the term "Wells" is occasionally omitted; it will be understood, however, that by Tunbridge is meant Tunbridge Wells.

raised to nearly 150° Fah., without undergoing decomposition ; this is corroborated by its speedy diuretic action. To this remarkable freedom from all other saline constituents—for the minute quantities existing cannot exert any influence—may be attributed the lengthened reputation of the spring, presenting as it does an unique instance of what are termed “Pure carbonated chalybeate waters.” Very seldom indeed will a spring be found which is at once—almost as pure as distilled water—of a uniform temperature—charged and chemically combined with effective, because gradual and unirritating doses of the most potent ferruginous compound—with the additional advantage of a gratefully stimulating gaseous acid—like that of the long and justly prized waters of Tunbridge Wells.

With reference to the *medicinal* properties of the spring : we may consider—first, the action of each of its ingredients ; and, subsequently, their combined influence, on the human frame.

The basis of the spring, namely, the water, is essential to our existence ; it forms nearly four-fifths of the weight of the body, its fluid and solid parts ; pervading all structures, conveying nourishment to all parts of the frame, depositing, separating, carrying away useless matter, &c. It repairs the loss of the fluid part of the blood from secretion,

&c. It is a vital stimulant, supporting without causing excitement. Water aids digestion and assimilation, by maintaining the tone of the stomach without exhausting its vigor, and by dissolving alimentary substances; and it probably directly co-operates in nutrition, by giving up its elements to supply the wants of the system. The celebrated Hoffman remarks, "That of all the productions of nature or art, water comes nearest to that universal remedy, so much sought for by mankind, but never hitherto discovered." Thus we find how the basis of the spring may become a powerful hygiènic and curative agent.

Carbonic acid gas, another important constituent of the mineral water, acts as a sedative on the mucous membrane of the stomach, promotes digestion by increasing the secretion of the gastric juice, strengthens the circulation, regulating and otherwise beneficially influencing various functions, the healthy action of which is essential to the well-being of the system. It gently stimulates the organic nervous system and the brain through the nerves of the stomach, cheering and exhilarating the animal spirits.

Carbonic acid increases the activity of saline substances, chiefly by assisting the water in perfectly dissolving them; thus effecting, in cold mineral waters, what increase of temperature

produces in thermal springs. But it is by co-operating with the next and most important ingredient of the chalybeate spring that this gaseous acid evinces its peculiar action.

The metal iron, termed by a sensible writer, "the most friendly of all metals as a remedy — the only metal possessing a medicinal agency that does not belong to the class of poisons," exists in the spring, as we have seen, in the state of protoxide combined with carbonic acid.

The researches of Baron Liebig lead to the conclusion that proto-carbonate of iron plays an essential part in the important function of respiration. A brief notice of this vital process will more clearly shew the special action of iron in the wonderful mechanism of life.

The venous blood, consisting of the red particles united with proto-carbonate of iron, and of many other organic compounds, is conveyed by the pulmonary artery into the lungs, where, amongst other changes taking place, the proto-carbonate of iron unites with a portion of oxygen contained in the respired air, carbonic acid being simultaneously evolved; a hydrated peroxide of iron results, together with the evolution of the animal heat of the lungs. The blood, having thus become arterial, is conveyed through the systemic arteries, to the capillary net-work

inosculating in contrary directions with the arteries and veins. In this microscopic network, the hydrated peroxide of iron of the blood-disks gives off part of its oxygen to the carbon and hydrogen of the decayed tissues. These elements go to form carbonic acid and water; the peroxide of iron becoming reconverted into a proto-carbonate; thus disengaging, from the evolution of the latent heat of the previous compounds, caloric sufficient to sustain the animal heat of the body. This vital process is being performed every moment of our existence.

From this brief sketch it will be manifest how essential the presence of proto-carbonate of iron is to the human economy. Although the advantage of administering proto-salts of iron in preference to its per-salts has now been generally recognized, it may be questioned if the reason for so doing be equally apparent. I have elsewhere* shewn, as the result of experience, that iron, in order to exercise its essential function, *must* be present as a protoxide in venous blood. May we not go farther, and conclude that iron, so as to exercise its special office in sanguification, *must* be present as a proto-carbonate? If this be admitted, we can at once see that it is the ready ability of presenting to the digestive organs the same com-

* *Lancet*, Vol. I. New Series, p. 606.

pound of iron existing in venous blood, which renders so active and beneficial the Tunbridge chalybeate; and, for a similar reason, insures its easy reception into the circulation. In connection with the researches above referred to, and as confirmatory of this view, it is deserving of notice that those ferruginous compounds artificially prepared, which rank next in activity to chalybeate springs, are salts of the protoxide of iron united with vegetable acids (citric, tartaric, acetic), which may be all readily converted, by the digestive organs, into proto-carbonates of iron.

This view being admitted, we can also, without difficulty, account for the inactivity of persalts of iron, as their efficiency would involve a previous reduction by the digestive or other organs, which might not be adequate to this conversion. Dr. Ure observes: "It appears to me that the peroxide and its combinations are almost uniformly irritating, causing heartburn, febrile heat, and quickness of pulse. Many chalybeate mineral waters contain an *exceedingly minute quantity* of proto-carbonate of iron, and yet exercise an *astonishing power* in recruiting the exhausted frame. I believe their value to be derived simply from the metal being *oxidized* to a *minimum*, and diffused by the agency of a mild acid through a great body of water, in which

state it is rapidly taken up by the lacteals, and speedily imparts a ruddy hue to the wan countenance.”* By assuming a proto-salt of iron alone essential, the cause of the inefficacy of salts of the peroxide becomes at once evident; their insolubility, indivisibility, irritating qualities, &c., not so satisfactorily accounting for their inertness. In connection with this subject, I may mention that the most recent experiments of M. M. Becquerel and Rodier substantiate Baron Liebig’s views (which have been questioned), by shewing that iron, in all states of health and disease, is invariably united with the red-blood-disks, the quantity being proportionate to the amount of the globules contained in the blood examined.

There are many other effects consequent to the important office of iron in the process of sanguification; it stimulates a languid circulation, increases the red particles of the blood, augments the animal heat, and strengthens the digestive, nutritive, muscular, and nervous systems generally, aiding in the growth and repair of the body, and in removing the deteriorated tissues. Iron exerts a specially beneficial action on the digestive organs, exciting into activity the muscular fibres and nerves of the alimentary tube. It increases the secretions when defective, and

* Chemical Dictionary.

otherwise corrects them if out of order. In short, iron strengthens and invigorates all the functions of organic or animal life.

Having thus considered the action of each ingredient of the Tunbridge chalybeate on the system, I shall proceed to describe the collective action of its constituents; in other words,—the *medicinal properties* of the spring—from which we may at once perceive how admirably all co-operate in rendering the Spa so efficacious; much of this part of our subject, however, has been anticipated in the previous account; hence, less detail will suffice.

The water, when received into the stomach, produces a slight shock to its nervous expansion, the tissues of the part are constricted, and the circulating fluid recedes; these changes are accompanied by a slight sense of chill; reaction soon follows, accompanied with an agreeable sense of warmth and buoyancy becoming diffused over the system; the circulation is accelerated; the nervous system strengthened, and a feeling of energetic activity rapidly imparted to the whole frame; the appetite is improved; the kidneys are stimulated to activity; and, if brisk exercise be taken, the cutaneous exhalation considerably augmented, especially if the temperature of the water is raised; the water promotes the alvine

excretions if the bowels have been previously disordered from foul accumulations, otherwise no action ensues, except a blackened appearance of the alvine discharge, evincing the change produced by the intestinal secretions on the iron, which need not alarm.

Not unfrequently, soon after commencing the waters, some disagreeable sensations arise,—vertigo, headache, drowsiness, flushed face, and a sense of tension about the head with bleeding from the nose, distention, flatulence or pain at the stomach. These unpleasant feelings soon subside, if the case be properly adapted for the use of the waters, and all other necessary rules duly observed.

Mr. Amsinck concisely sums up the medicinal properties of the chalybeate waters:—"In their general operation, then, they are tonic, diuretic, and diaphoretic; a very gentle stimulus, increasing the power of the secretory system; a mild but active medicinal compound, well calculated to strengthen the stomach, promote digestion, cleanse the first passages, and purify the whole glandular system."

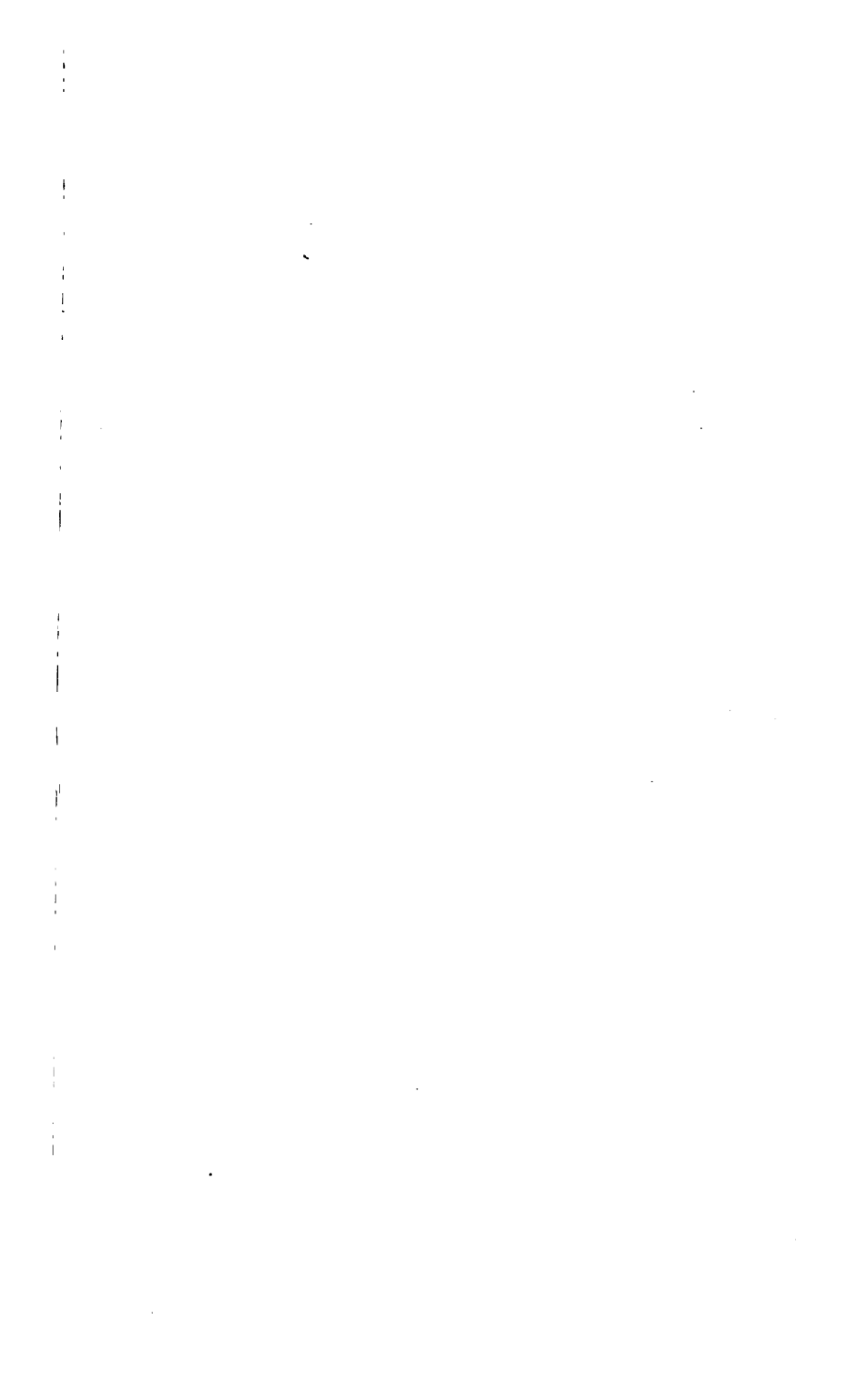
With respect to the activity of the chalybeate, he says, "Certain it is, that the mineral waters produce a more powerful effect than is observable from any artificial preparation of iron; whether this arises from the minute division with which

chemical bodies are united to water, so as to render them more diffusible over the whole system, and more active in the stomach; or that the acid of the stomach is more capable of acting upon the ferruginous principle when so diluted, I will not attempt to prove. Nice is the accuracy of the modern chemist in investigating the component parts of mineral waters, yet analysis is not so far to be depended upon as to supersede the experience of effects."

I may here notice some flippant assertions made, respecting this head-quarters of English chalybeate springs, by Dr. Granville, in his "Spas of England."

Truly this learned gentleman must have no small assurance to impugn at once—the accumulated evidence of three centuries—the favourable testimony of ancient and modern physicians of eminence—and the *palpable* effects of the very potent ingredient contained in the spring; of these effects any candid observer may satisfy himself.

In substantiating the medicinal power of the Tunbridge Spa, I might quote from every writer on this locality for the last three centuries, and appeal to numerous living witnesses who have derived positive benefit from its use; but my limited space would not permit, nor do such





THE SPRINGS AT TUNBRIDGE WELLS.
IN 1664.

untenable assertions demand a lengthened notice here. It may not, however, be unprofitable to remind the doctor (or any other sceptic) of the opinions of a few of his fraternity, who it is hoped are equally entitled to express their convictions.

Out of numerous similar expressions from physicians of olden time, I extract one from a letter of Dr. Goodall, a cotemporary of the illustrious Sydenham, to his friend Sir Thomas Millington, then president of the College of Physicians, A.D. 1702.; this communication will serve as an echo of the opinions of former days respecting the sanative qualities of the Spa. He writes : " After sixteen weeks continuance at Tunbridge Wells, my stomach grew sensibly better, my strength and spirits were much recruited and amended, so that I could walk up hill with more ease and pleasure than at London, or at my first coming to Tunbridge. I bless God that I can now eat and drink, study and converse, with an easy, cheerful, and contented heart ; I usually spend two hours in an evening at bowls, and return from the green better than I went to the same. My waters pass well, and my legs grow sensibly lesser and stronger, and that which is most surprising, I am not so affected with change of weather as I have been for about fifty years past. This great

alteration and advantage which I have (through God's blessing) received from the waters, doth lead me into the following opinion: that in all chronical cases (occasioned by acute diseases, great hæmorrhages, or other evacuations wherein the crasis of the blood and tone of the parts are very much weakened and debilitated), hypochondriacal and hysterical affections, cacochymies, cachexies, ill habits of body, &c., are not to be cured without a long course and continuance of the waters. To my great surprise and admiration, I found that, by an obstinate continuance of drinking these waters fifteen or sixteen weeks, the swelling disappeared, so that I could daily ride with ease and pleasure, and that obtuseness and tenseness of the muscles was conquered, and then these muscles grew as pliable and obedient as in my youthful years."*

Approaching the present day; Dr. Saunders says: "The *most noted* of the simple chalybeates in this country is that of Tunbridge Wells." Sir C. Scudamore remarks: "Some persons, I know, when in perfect health, have made trial of the water; and not finding from it any notable effect, *have most unjustly undervalued its powers*, which ought not to be expected to act in any very

* Unpublished Fragments from the Bodleian. Provincial Medical Journal, vol. iii., p. 43.

marked manner, unless on the invalid. An exception, however, presents itself to this observation, as I can assert from experience, that all persons in full health cannot make free use of the water with equal impunity. A plethoric habit, with vessels easily excited to strong action, might find it to be a very injurious stimulant.”*

Dr. E. Lee observes: “Among the English chalybeate springs, those of Tunbridge Wells may be considered to hold the first rank.”†

In an article which Dr. Granville himself considers “ably written”‡ in the Cyclopædia of Practical Medicine, Dr. T. Thompson acknowledges the Tunbridge spa to be “the most celebrated of all the chalybeate waters in England,” and expresses himself highly in favour of its medicinal powers.

I might, in fact, adduce the opinions of a host of medical men in favour of the tonic powers of the Spa; but its reputation rests on more secure footing—its chemical constitution.

Dr. Granville jocosely questions the efficacy of what *he terms* the “homœopathic quantity” of “oxyde of iron” in the spring, citing Mr. Hutchinson’s steel treatment of tic-doloureux,

* Analysis of the Mineral Waters of Tunbridge Wells, p. 24.

† On Mineral Waters.

‡ Spas of Germany, vol i., xxvii.

“in which as much as 80 grains” of *the oxide* of iron have been given; and he perverts Sir C. Scudamore’s expressions; which, far from sanctioning, were evidently intended to anticipate and refute, such scepticism.

This may be at once perceived on referring to the passage (page 22) I have cited, which immediately succeeds the quotation of Dr. Granville. Moreover, Sir C. Scudamore goes on to say, “it is admitted universally, both by medical and chemical writers, that the most active form in which iron can be administered as a medicine, is in the state of solution by carbonic acid;” again, “it is equally true that this water, judiciously employed, is a *powerful* and *very successful* remedy in many diseases.”†

With regard to Dr. Granville’s first proposition—his *augmentum ad ignorantiam*, so far am I from denying the quantity of *oxide* of iron occasionally given, that I will refer him to a case, mentioned by Mr. Maclure, in which “30 pounds were given in a few months!”* But, surely I need not inform our learned critic that no two medicinal compounds differ more in power than those he identifies.

* Lib. Pract. Med., vol. ii., p. 214.

† Analysis, p. 26.

We have seen, from Baron Liebig's investigations, that proto-carbonate of iron is essential to the respiratory function ; we have found that this compound, if not the only active, is the most active preparation of iron ; and we have also found that an ordinary dose of the Spa contains nearly one-fourth of a grain of this very compound which even Dr. Granville states (by Mr. Schweitzer) to be "*a most obstinate preparation, and exists only perfect in mineral waters !*"*

With far less injustice might Quinine be confounded with Peruvian Bark. This proto-carbonate of iron, at once—the most potent—most difficult of preparation, from its tendency to pass to a higher state of oxidation—*thoroughly dissolved and combined* with carbonic acid ; from its excess, and the small amount of saline matter in the spring, permitting—extensively diffused, directly applied all over the digestive tube, and readily absorbed—This is the preparation Dr. Granville confounds with the *peroxide*, improperly termed carbonate of iron,—an almost inert compound, from its insolubility, &c.—containing scarcely four per cent. of the really active ingredient, the mechanical cause of its escaping decomposition likewise preventing its

* Spas of England, vol. iii., p. 573.

absorbition—oppressing and nauseating the enfeebled stomach.

As to the homœopathic quantity which Dr. Granville considers so inoperative, I shall again remind him of the opinions of his cotemporaries—one of them, Dr. J. Johnson, for many years one of the most eminent medical reviewers in London, a rival hydrologist and Spa-frequenter of no small research and discernment.

Dr. Joy says: “The tonic effects of chalybeates appear, however, in a great proportion of cases, to be most *satisfactory* and *permanent* when administered in *moderate* quantities, as well as in a very soluble and dilute form, and when their use is long persevered in, as in the case of ferruginous mineral waters.”*

Dr. J. Johnson states that (the quantity contained in the Tunbridge Spa, namely,) “a quarter of a grain of iron, in a pint of mineral water held in solution by carbonic acid, will act more efficiently on the human constitution than *ten times that quantity* taken in pills, powders, or potations, as prepared by the chemist.”†

It is worth noticing, also, that Dr. Granville, in his laboured encomiums showered on the Bath waters, deemed it necessary to write nearly a

* Lib. Pract. Med., vol. v., p. 293.

† Excursions to the English Spas, 1843.—See also page 16 of this work.

page of precautionary advice to "such patients as cannot bear the action of steel"* in water, which contains, according to Mr. Phillips' analysis, the really "homœopathic" quantity of one-ninth of a grain in a gallon—or *twenty times less* than the quantity contained in the Tunbridge water!

Medical practitioners seldom meet with cases more difficult to treat than those of constant occurrence, in which strengthening measures are urgently required, and yet in which the digestive organs and nervous system are in a morbidly sensitive condition, little tolerating ordinary doses of tonic medicines. Dr. Granville himself judiciously remarks, "how often does it happen that strengthening or roborant mineral waters do not agree with the patient, even when required by the pressing nature of his case? Because the nerves of the individual, being exquisitely susceptible of every impression, impede the digestion of the water when received into the stomach, and spasm of that organ, or of the whole frame, will ensue."

It is in this class of invalids especially that the really admirable compound, presented as a free gift from the cunning laboratory of nature, exerts its curative action, unequalled by any artificial.

* Spas of England, vol. iii. p. 415.

preparation of iron. The iron is as it were smuggled into the circulation, the purity and coolness of the water, together with the calming effects of the carbonic acid gas on the alimentary mucous membrane, admirably co-operating to re-establish the tone of the frame without producing irritation.

If a proper selection of such cases were made, and all other essentials duly observed, the invalid would gratefully acknowledge the happy change wrought on a feeble system by the chalybeate—even without the intervention of any “homœopathic” views to assist belief in its sanative properties.

Having adduced reasons for differing with Dr. Granville on some topics, I feel happy to agree on others with this popular and often instructive author—“*nemo mortalium omnibus horis sapit* ;” recollecting, however, that the intrinsic properties of the Spa, and the improvement of—mismanagement of—or other deteriorating influence on—the Spa, are perfectly distinct subjects for remark.

So fully do I coincide with Dr. Granville’s suggestions for charging the water with carbonic acid gas, that I will quote his remarks, believing them deserving of attentive consideration. He says, “Had this very steel stream of Tunbridge Wells possessed an excess of that gaseous

ingredient, its effects would have been wonderful and lasting. It is, even now, not too late to impart to it, by easy and effective means, during the hour when invalids and other sojourners in the place usually apply for the water, that all essential requisite"—“I stated it before, and I may be permitted to repeat it again, that had this water possessed twenty cubic inches or more of carbonic-acid gas in a pint, (and it is quite possible to impart this to it), its effects would have surprised the most incredulous as to the efficacy of Tunbridge water.”

I need not advert here to what has been said previously respecting the influence of carbonic-acid gas in powerfully promoting all the good effects of iron, except to remark that the Bruckenaurof of Germany—the counterpart of Tunbridge Wells, excels the latter only in the greater amount of this gas contained in the water, and is inferior to that of Tunbridge Wells in the quantity of iron, small as this has been made to *appear* ! I consider that the benefit and convenience of the invalid, as well as the future reputation of that Spa, which has for so lengthened a period held the highest rank as a chalybeate spring in England, demand the improvement and proper regulation of the present *establishment*, so as to keep pace with modern improvements elsewhere.

Changes might be made involving little outlay : the water might be impregnated with carbonic acid gas by means of an ordinary soda-water machine, which could be set at work for a stated period. I feel satisfied that the result would prove amply remunerative, and conducive to the *continued* prosperity of the Spa. A definite scale of charges—at once equitable to the applicants and attendants—would likewise conduce to the well-working of the establishment.*

* I have been favoured with the following suggestions on this subject from E. Schweitzer, Esq., formerly director of the German Spa, at Brighton.

"I am of opinion that the value of your mineral water may be enhanced by surcharging it with carbonic-acid gas. The mode of doing this is dependent on local circumstances, and on the quantity and time in which it is to be dispensed. For the production of carbonic-acid gas would be required—1, a generator; 2, a purifier; 3, gasometer (gas-receiver.) The size of these apparatus must stand to a certain degree in proportion to the probable consumption. If the consumption is large, the carbonic-acid gas might be introduced from the gas receiver at once into the basin, or bottom of the small well, but so that its current should be dispersed through the whole body of water. Should, however, the consumption be small, the water is to be introduced (without access of the atmospheric air) into an apparatus, where it may be charged with any quantity of carbonic-acid gas. When the water is introduced, care should be taken that no atmospheric air be brought into contact with the water; and, likewise, that the carbonic-acid gas be free from it—precautions which are of great import. For, besides that the proto-carbonate of iron will be changed into peroxide by the influence of the atmospheric oxygen; the the carbonic-acid gas, containing atmospheric air, will likewise not be so fully absorbed as pure carbonic-acid gas, substantiated by the fact that one volume of atmospheric air will expel twenty volumes of carbonic-acid gas."

I am pleased to be enabled to state that Mr. Gorrings, chemist, Tunbridge Wells, has obtained an apparatus for aerating the water; and, from personal observation, I can vouch for its being adequate to effect the requisite improvement. The adjacency of Mr. Gorrings's laboratory to

I fully concur with Dr. Granville that the practice of sending to a distance chalybeate water—so prone to decomposition, unless proper precautions be taken—is not by any means conducive to the continued reputation of a Spa ; but other reasons assigned by Dr. Granville for the presumed retrogression of the Tunbridge chalybeate—a mere assumption, however, as no orderly registration of applicants has been kept at the establishment—are not valid. Why, it may be inquired, has Spa,* formerly the most celebrated continental chalybeate, been nearly deserted for others no way superior? Is this attributable to want of efficacy? If so, then all hydro-physicians are mere impostors, as this very spring contains in abundance all the essentials so pointedly mentioned by Dr. Granville.

The caprice of fashion will always exert a certain amount of influence—even with professional men, who, sometimes disregarding the slow but sure method of inductive reasoning, or per-

the spring affords him an opportunity of impregnating the recent water with carbonic-acid gas. Under any circumstances, this arrangement will be highly convenient to invalids. Therefore, I feel it incumbent on me to state unequivocally that, unless a similar arrangement be effected on a larger scale at the *primitive* establishment, the chalybeate water, thus charged with fixed air, will prove more beneficial than the unimpregnated water: The preceding pages will have fully shewn the superiority of *aërated chalybeate waters*.

* See Dr. J. Johnson's Pilgrimages to the Spas.

mitting their better judgment to be overruled, yield in matters which they may subsequently have reason to regret.

As to the charge of mismanagement brought against the place, it must be acknowledged that much more might be done to improve its natural advantages. The inhabitants, however, are by no means unmindful of what is required; but they are cautious in embarking capital in doubtful speculations; moreover, opposing interests—every where the bane of improvement—in this case, involve an expenditure of trouble, time, and outlay, which few will undertake.

I shall conclude this chapter with a few observations relating to the superior advantages attending a residence at home watering places, a careful examination of which might prevent disastrous consequences to invalids about to visit continental Spas in search of health.

The present era is most conspicuous for great facility of visiting distant places and scenes, in a comparatively short period. This has, doubtless, enticed many persons to migrate to far distant climes, who in former days would have felt satisfied with a home tour. It is not for me to interfere with the predilection of those in health. But invalids—the great majority of invalids—should beware of this continental mania. It

behoves them to consider well the many disadvantages and risks they are obliged to encounter abroad, which may be avoided at home. It is well known to medical practitioners that the constitution of the inhabitants of the British islands is moulded by hereditary transmission, and adapted to the climate, customs, and numerous other agents peculiar to these islands, a successful treatment of disease involving minute accuracy in duly appreciating their influence on the frame ; so that none but those habitually conversant with constitutions thus modified, can be expected to treat with success deviations from health. It is not wished to draw invidious distinctions as to the relative superiority of British medical practitioners—the result of a highly *practical* education—but rather to point out briefly *why* invalids are treated more beneficially by practitioners, whose daily and hourly duty it is to investigate those nice peculiarities above alluded to. Moreover, invalids may find—to their cost—their corporeal powers inadequate to sustain the protracted exertions, exposure, and fatigue necessarily accompanying any such migration. They may experience irreparable injury from undue excitement, if the system be inadequate to this unaccustomed tax on its feeble powers ; or fatal aggravation, where disorganization of any part is slowly progressing.

Dr. James Johnson's remarks, introductory to his treatise on the English Spas, are so apposite and truthful that I quote them at length, with little omission. "There are so many points of comparison and contrast between the foreign and domestic Spas, that an ingenious casuist would have little difficulty in proving, with much plausibility, the superiority of the German waters over the English, or the *latter* over the *former*, according to the party by which he was retained, or his own fancy. But the medical casuist should plead for truth, and not for victory—for the good of suffering humanity, not for self-interest. But it is not the most potent or the most palatable medicines that are the most useful or efficacious. There is another important point to be taken into consideration. There is not one in one hundred of our British invalids requiring the remedial agency of a Spa, who can afford either the time or expense necessary for a journey to even the nearest of the German mineral waters. The expense of an English passport, leaving aside the worry of getting it countersigned by the representatives of half the potentates of Europe, would pay the fare of a London citizen to the most distant Spa in England! It is very easy, but it is very useless, to tell a man with a large family and limited income, that venison and turtle are better fare than mutton and codfish—

or, that Champagne and Burgundy are superior beverages to Marsalla and porter. Ordinary people must put up with ordinary provender—and many hundreds of our countrymen and women must be content with Tunbridge Wells as a substitute for Schwalbach or Bruckenau. For the real or *supposed* inferiority of British Spas, the middle classes have some compensation, or at least consolation, in the saving of time and money—the security from a *sea-voyage* and *sea-sickness*—the trouble and expense of embarkations and debarkations—the scrambles at foreign hotels—the vexations of passports, police, and douanes—the *rough* roads, slow journies, and *violent concussions*—unaccustomed diet—ignorance of the language—the long and wide separation from friends and native home; at a time, too, of sickness and anxiety. It must be acknowledged that these are only *negative* advantages—but HEALTH itself is no more than the absence of disease. But has the home Spa-goer no *positive* advantages over the continental pilgrim in pursuit of health? I apprehend that he has—though he may not appreciate them unless he has crossed the Channel. Is the superb travelling, whether by rail, stage, or post, through a country unequalled in Europe, for beauty, cultivation, and fertility—*nothing*? Are Macadamized roads, on which we are neither blinded

by dust, splashed with mud, or contused in body and limbs—*nothing*? Is the comfortable hotel, where plain and wholesome food can be procured at ten minutes' notice, by day or by night—*nothing*? Are beds, six feet in breadth, by eight in length—*nothing*? Is the box-seat of a splendid stage-coach, which whirls us through the fresh air, at the rate of twelve miles an hour, amid scenes and landscapes of exquisite beauty—*nothing*? There is, at all events, *nothing* of the kind on the Continent. Is the daily post, through which we communicate with our family and friends—by means of which we can direct our concerns easily—all for one penny—*nothing*? He only who has experienced the tiring delays and heavy expences of foreign post-offices, can appreciate the blessings of the British penny post! Is the consciousness that, in the hour of peril, sickness, and distress, our nearest and dearest relations can fly to our succour in a few hours, even from the distant Metropolis—*nothing*?

Finally, is there nothing consolatory in the anticipation that, should the hand of death press upon us, when absent from our family in quest of health, we shall have the consolations of religion administered by our own clergy, and our native soil as a lasting sepulchre where our ashes may repose with those of our friends and relations?"

CHAPTER II.

Complaints benefitted by the Mineral Spring, with Directions for its Use.

Necessity for Professional Advice in all doubtful cases.

General Indications.—Debility.—Anæmia.—Peculiarly suitable in Maladies pertaining to the Female Constitution, Uterine Disorder, Chlorosis attended with various Functional Derangements, Causes of Debility, other Affections of the Uterine System.—Atonic Dyspepsia.—Strumous Dyspepsia.—Other Affections of the Digestive, and Associated Organs.—Various Disorders of the Nervous System.—Diseases of the Heart in debilitated habits.—Atonic Gout.—Contra-Indications.—Directions for taking the Waters.—Suggestions of Sir Charles Scudamore.—Concluding Instructions.

THE following brief sketch of the disordered states of the human economy is not by any means intended to include all those in which chalybeates might be used with benefit ; neither is it meant to supply the place of judicious medical advice, without which, as may be inferred from previous remarks, a correct adaptation of the waters of Tunbridge Wells to any particular case would be unattainable in very many instances ; the professional eye alone

can detect those indistinct lineaments of disordered conditions of the system, *apparently* similar, but in reality acknowledging very *different* causes, diametrically *opposed* in their nature, and amenable to very *different* remedial treatment.

A physician who long practised in Tunbridge Wells with a deservedly high reputation, has well signalized this necessary precaution; he says: "There is not a more fertile source of trouble to the profession, of suffering to the patient, and of the *discredit* which at times *attaches* to many *very excellent remedies*, than the indiscriminate application of the same medicines to the same sensations of different invalids. Some injudicious practitioners, without discrimination, and perhaps half educated, bring odium upon the profession; for it is absolutely impossible, with the present state of our knowledge, even improved as it is, to lay down any general rules applicable to cases of an apparently very similar nature in the multifarious varieties of the human constitution. The physician who does this acts as dangerously and indiscreetly as the pilot, who, with the chart of one river, would steer his vessel up another, similar in appearance, by the directions of it; for, infallibly, the patient in one instance, and the vessel in the other, would be destroyed in the storm."* Nor yet must it be supposed that the use

* Dr. Yeats. Descriptive Sketches, p. 73.

of the water will, without fail, remove those disorders in which it is applicable, without other not less essential measures be, at the same time, accurately and perseveringly followed. Still, the characteristic features of some aberrations from health about being mentioned, may serve as a general guide in the adaptation of the chalybeate to any individual case.

As a general indication, it may be stated that the waters are useful in disorders occurring in constitutions which partake of the lymphatic temperament, characterized by—light complexion—white or sandy hair—bluish grey eyes—eyebrows and eyelashes inclined to white—circulation languid—the frame often large—muscles large, but deficient in strength—a disposition to indolence and in exertion—the temper unmoved. It will be found that the depraved states of the system, which I shall presently notice, originate in, or are grafted upon, constitutions thus marked, more frequently than in any other temperament. The nervous temperament occurs next in frequency; it is more immediately characterized by—the circulation being easily excitable, without power—the pulse frequent and weak—the action of the heart unequal, easily affected—strength and weakness equally exaggerated, tending to exhaust, and use its

resources with waste of nervous power—the sensibility acute—the general deportment variable—proclivity to nervous disorders. The *habit* of body most constantly accompanying those temperaments in which iron is indicated, is a spare and relaxed condition, the result of—excess—exhaustion—anxiety—mental depression and distress.

Debility—a depressed state of the vital energy of a part or of the whole frame—is the most distinctive character of many if not of all the disordered states we shall briefly notice ; but, as it accompanies other conditions of the system in which tonics would prove most injurious, we must carefully distinguish those forms of debility in which the chalybeate is indicated. Primary debility arises from direct loss of power consequent to—deficient nourishment—severe loss of blood, &c. ; it is characterized by—pure atony, not arising from febrile irritation, or inflammatory action, in any organ—exhaustion—languor—cool skin—pale and moist tongue—here the chalybeate is most applicable. Secondary or indirect debility arises where previous excitement leaves the system or any organ in an exhausted and irritable condition ; if the irritation existing be accompanied with dilated and engorged vessels, the chalybeate tests the stage of irritation ; if a *mere*

sequel of excitement, the waters remove these conditions, equalizing and strengthening the circulation; but, if excessive sensibility be present, pain and febrile disturbance will result. Relative debility exists when an undue distribution of power takes place; one part being in an excited state; another, related to the former, in a weakened condition, producing impairment of function and sympathetic disturbance; here—provided there be not an *excess* of function, *excitement* approaching *inflammatory* action—the use of the chalybeate is indicated.

Anæmia—a state of the vascular system, where the blood is deficient—is an other condition present more or less in all the maladies about being noticed; a minute account of which will not, therefore, be required, as their most characteristic features will be found comprised in the symptoms of anæmia. This state is denoted by—puffiness of the face—general pallor of the *skin*, *gums*, and *lining membrane* of the *mouth*—the *tongue* being *white*, or rather *pallid*—the stomach deranged and often excessively irritable—the extremities cold—debility—palpitation of the heart with difficult breathing, and fatigue on slight exertion—faintings—headache of a fixed character—the pulse thready, quick, and easily accelerated—the secretions and excretions for the

most part scanty—the bowels torpid—the spirits depressed—various nervous affections being present—the mind easily agitated—the memory defective—vision indistinct. Anæmia may also be *local*, the signs of which are more equivocal ; its existence must be inferred—from the local disorder of function—from the sympathetic attendants of local anæmia, these again require interpretation by signs taken from the general condition of the system—by the absence of evidence of an opposite state—by the mode of production—and by the effects of remedies. These distinctions are important, as it is only in the true anæmial condition that the chalybeate is admissible. The symptoms marked above in italics may always be relied upon as indicative of general anæmia, in which iron is most beneficial ; and it is equally useful when general anæmia, corresponding with primary debility, and arising from loss of blood, exhausting discharges, &c. is of recent date. But when this state is of long continuance, the organs become deeply modified, the fluids vitiated, and a general cachectic condition of the system supervenes ; which is denoted by the sallow and dusky countenance—not *mere pallor*, and by the depraved character of the secretions and excretions ; hence the anæmic condition is only a part of the disease which often proves most intractable under

any treatment. If the vital powers be greatly depressed—the blood and humours extremely vitiated—the nervous system almost prostrate—steel would only hasten the inevitable event. Again, if organic lesion has resulted iron would be injurious, except in cancerous disease of the uterus, in which severe loss of blood produces anæmia, here it will often produce the best effects. The signs of *local* anæmia, as previously mentioned, are much more obscure ; as in *relative debility*, so also in cases of local or relative anæmia, resulting from undue accumulation of blood in an associated organ, the chalybeate must be had recourse to with much discrimination.

Having premised these general remarks—from which may be perceived the necessity of attending to the *form*, *stage*, and *course* of disease—we shall be enabled to judge more clearly of the varieties of each malady most amenable to strengthening measures.

The class of complaints receiving most benefit from the Tunbridge Spa which first in order arrest our attention, are those peculiar to the female constitution ; and most indubitably a fitter theatre could not well be imagined, much less realized, upon which to display the inherent power of any remedy, assisted—enhanced by all

the natural advantages of this pre-eminently favoured locality, where a happy union of three of the imaginary elements of the ancients—earth, air, and water—conspires in effecting that fortunate consummation so ardently hoped for—restored health, a blessing never sufficiently prized, until we feel the withering hand of disease upon us.

A clever writer remarks that, “Mineral waters being remedies not unpleasant to the palate, gentle and mild, yet powerful in their action, would appear to have been prepared by Nature, particularly for the fair and tender sex;” and as we proceed to investigate the maladies peculiar to the female organization, the more strikingly just will this truth be found.

Retention, suspension, or irregularity of the uterine functions, takes place in two diametrically opposite conditions of the system; one attended with the appearance of superabundant circulation; the other with constitutional debility; to this latter form the subsequent remarks are alone applicable. This form is characterized by—pale features—coldness of the extremities—a small, weak, and easily accelerated pulse—quick walking being soon followed by breathlessness, with great proclivity to fatigue—the mind being sluggish—the spirits low and depressed—the body

becoming emaciated—the appetite failing ; in short, the constitutional symptoms are those of anæmia previously noticed. The periodic discharge has never appeared ; or it gradually diminishes, is defective in quantity and colour, and, becoming irregular, eventually ceases. When either state has continued for some time, it merges into—Chlorosis, characterized by—a waxen or cadaverous complexion—the upper eyelids being brown, the lower lead-coloured—the skin harsh and dry, assuming a bilious tinge—the appetite depraved—the bowels irregular—the senses morbidly excitable—the breath being fœtid, with rough and fissured tongue—œdema of the lower extremities in the evening, and of the face in the morning—the breathing hurried on the slightest exertion—the secretions all deviating more widely from their natural character ; in short, most of the symptoms indicative of a cachectic state of the system are present. This malady—green-sickness, as it has been termed—is intermediate between cachexia and anæmia, the blood being not only less in quantity, but very much altered in quality, containing less of the red-globules and of other solid materials ; so that no organ escapes from much functional derangement.

Accompanying this morbid state are many local

complaints, which, to save repetition, may be here noticed, as they mostly arise from primary derangement of the sanguifying process attending the retained, suppressed, or altered periodic function. There are symptoms resembling *inflammation of the brain*, characterized by violent throbbing headache and exalted sensibility with delirium; when less in degree, this state is attended with less urgent symptoms, the patient usually supposing the existence of "a flow of blood to the head," which *seems* correct by such symptoms being present as—headache, weight and coldness in the head—giddiness—dimness of sight with moats floating before the eyes—rustling noises in the ear—throbbing of the temporal arteries—confusion of thought and impaired memory. But this state depends on debility, it is recognized by—pallidity—loss of flesh, and muscular flabbiness—the pulse being weak and small, but easily excited—headache, occupying the back of the head chiefly—and by most of the symptoms of anæmia previously noticed. The lowest degree of this state constitutes the constant headache of chlorotic females, arising from passive congestion; the *sympathetic* headache, often confined to a small spot on the crown of the head, is but a variety of the latter. Symptoms resembling *pleurisy* or *inflammation of the lungs*,

—cough—pain in the side—difficulty of breathing—are not unusually present. *Nervous palpitation* simulating that accompanying disease of the heart. Disorders of the *digestive organs*—depraved appetite—flatulent distention of the intestines simulating pregnancy. Symptoms resembling *abdominal inflammation*—exquisite tenderness on slight pressure. Affections of the nervous system—hysterical convulsions—chorea—epilepsy—partial paralysis. Affections of the windpipe and bronchial tubes, with loss of voice or intermittent asthmatic attacks. Painful affections of the *joints*. Various *mental* emotions. Such are the maladies occasionally associated with the condition of the system and functional derangement of the uterus above sketched; but the limits within which I am necessarily confined, prevent my entering into detail, or even naming many other symptoms which serve to detect that depraved state of the frame, in which a course of the Tunbridge chalybeate is so beneficial. There is, however, one other condition, mostly connected with Chlorosis, well deserving of notice, from its being not unfrequently confounded with a plethoric habit of body; an overloaded state of the vascular system, does indeed exist, but it is the plethora of debility, arising from the circulation of two large a quantity of impoverished

blood, in which, though depletion may be rarely—very rarely—called for, a chalybeate will restore the circulating fluid to its healthy state, in conjunction with other medicinal and hygiènic remedies. In this condition, the head symptoms sketched above are well marked, attended with heavy sleep, and somnolency in the day. The countenance is of a pale rosy colour, tumid, and frequently glistening; the pulse not so depressed as in the preceding variety. Heat and throbbing at the chest are occasionally present, and a disposition to bleeding from the nose or lungs often attends. The strength is not so much diminished, nor the fatigue from exercise so oppressive.

The most superficial glance at the preceding outline will suggest how vain would be the hope to remove such a formidable array of symptoms by any single remedy. In vain will the invalid resort to Tunbridge Wells, unless the greatest attention be given to remove or counteract any known causes which may have originated or aggravated this depraved condition of the system, and the requisite dietetic and regimenal measures be observed faithfully and with untiring perseverance.

The causes of this state are various and widely diffused. Not unfrequently the malady is

attributable to original delicacy of constitution, from hereditary transmission, which would seem, according to the recent researches of M. Lugol, to have a wider range in the production of disease, than has previously been supposed. But one of the most fruitful sources of constitutional debility, is undoubtedly attributable to the pernicious systems of education hitherto pursued ; by which the intellectual and sensual faculties are strained and fostered to their utmost extent, often to the neglect, or inadequate observance, of the all-important essentials conducive to a sound and healthy organization. To what purpose, it may be inquired, are the mental powers cultivated, if our material organization be not in a state to bear with fortitude the many inimical assaults, from extrinsic sources, which all have to endure or to what purpose a highly endowed understanding, if obliged to inhabit and accompany the sad and sickly frame, perpetually obtruding its pains and sufferings, to an untimely, but perhaps not unwelcome grave !

It is to be hoped that the spirit of enquiry now abroad, will soon convince a discerning public of the erroneous notions hitherto very prevalent on mental and physical education ; and will lead those who are intrusted with the care of juvenile, especially of female education, to the adoption—

of such a course of mental culture as will not obstruct the healthy development of the several corporeal functions, upon which so much of the future welfare of their pupils depends. Neither should parents be too solicitous for the premature unfolding of faculties, which, without bodily strength, would prove the bane of existence, by fostering a morbid sensibility—the immediate source of those distressing sensations to which the female organization is exposed.

I shall enumerate a few more of the most common causes of constitutional debility—blood-letting practised for inflammatory complaints—some uterine affections subsequently mentioned, exhausting discharges of any kind—insufficient nutriment, especially animal food—neglect of sufficient exercise, and the injurious influence of close and ill-ventilated apartments—inadequate clothing—immoderate use of medicine—convalescence from severe diseases—a residence in a moist, cold, and an otherwise unhealthy locality.

The invalid must endeavour to remove or counteract these noxious sources of disease; returning health will soon follow a rigid observance of a suitable regimen—early hours—plenty of fresh air—exercise on horseback, if the strength permits, continued so long as not to fatigue or

waste the powers of the system—light and digestible animal food—a moderate use of wine in some cases, Madeira, Sherry—the shower-bath, gradually reducing the temperature from tepid to cold water, the feet being put into hot water : where considerable debility exists, sponging the surface over with tepid or cold water, successively sponging and wiping with a coarse towel different parts, will be sufficient. The Tunbridge chalybeate, taken according to the directions subsequently given, will often prove a powerful and effectual auxiliary. Where the malady is deeply rooted, and assumes the graver character of chlorosis, medical supervision will be indispensable.

In using the waters for suppression, or irregularity of the periodic discharge, the invalid must be quite satisfied that this indisposition does not arise from local irritation, congestion or inflammatory action, from mechanical impediment, or organic disease. The pain occasionally caused by the chalybeate water, need not alarm, as, in general, it may be considered as a sign of recovery—provided the case be adapted for chalybeates. Dr. Yeats judiciously remarks : “ Many ladies come to this place under feelings of considerable debility, and with a sense of *weight* and weakness of the *bas ventre*. Referring these sensations to the uterus, which is correct,

but which are erroneously attributed to debility only, they commence drinking the waters. They find to their cost that they are wrong, for the necessity of applying for medical aid is soon apparent, when it is discovered that additional mischief has been produced. The fact is, there is often a peculiar irritability of this organ (like what frequently occurs in any other), accompanied by a preternatural turgescence of its vessels, which renders the use of the waters totally inadmissible, and at times dangerous." Dr. J. Johnson observes, when comparing Bruckenau in Germany with Tunbridge Wells : "The water of Bruckenau, like all pure tonics, is a powerful engine in skilful hands ; but a dangerous weapon when wielded without judgment. Debility, or at least a *feeling* of debility, attends almost every disease, whether acute or chronic. To remove this symptom is the constant prayer of the patient, and the great embarrassment of the practitioner, who knows that those remedies which augment the general strength, *too often increase the activity and danger of the local disorder*. The attempt to restore general health or strength by tonics or chalybeates, when there exists a local disorder of any organ or structure, is not merely *illusory*, but prejudicial or even *dangerous*"*

* Pilgrimages to the Spas, p. 181.

If the characteristic signs sketched above, be carefully noted and discriminated, the invalid may proceed with confidence in the use of the waters ; but in all obscure cases, medical advice will be requisite.

I proceed to notice briefly other uterine affections, in which the Tunbridge chalybeate will act beneficially.

Painful periodic indisposition, characterized by—tenderness on pressure—pain, neuralgic, darting or fixed, for the most part remittent—irritability of the stomach and intestines—the nervous system being occasionally much deranged, fainting, or hysteric convulsions occurring.

In the *interval* of the periodic indisposition, the chalybeate will be found most appropriate, in conjunction with the observance of proper diet and regimen, avoiding, as far as possible, any source of mental anxiety, undue excitement of the nervous system, or other exciting causes. If the circulation is much accelerated, preparatory measures will be required previous to commencing the waters ; but if the case exhibits the neuralgic form, and the anæmic condition alone is present, no other medicinal auxiliary will be required.

Excessive periodic discharge—the quantity being disproportionate to the powers of the invalid—mostly occurs in persons of a nervous,

or lymphatic temperament ; both of which are more immediately denoted (in addition to the characteristics previously noticed)—the former, by a ready excitability of disposition, rapidity of muscular movement, with a thin and pallid surface ; the latter, marked by a florid and bulky habit, but the strength not being in proportion, fatigue easily induced, the circulation readily impeded, fainting occurring with facility, and the periodic indisposition producing much exhaustion. In endeavouring to remove this condition of the system, the causes more immediately connected with its production, viz.—heated rooms—too warm clothing—tight lacing—*mental emotion*—prolonged lactation, &c., must be carefully sought after and avoided if possible. In the period of active discharge, rest must be enjoined in the horizontal posture ; a cool and unexciting diet enforced ; and proper medical treatment had recourse to, if seriously indisposed. In the interval, horse exercise must be avoided : walking gently, or taking an occasional drive in an open carriage ; the use of the shower-bath, or a cold hip-bath, night and morning for a few seconds ; and all other dietetic and regimenal rules, which are calculated to restore and strengthen the system, being observed. The chalybeate will have an excellent effect in bringing about this desirable

state, if used in this malady, when not arising from local organic disease, or mechanical impediment to the circulation from disease of the heart or lungs; when all the functions are tardily performed, the pulse being feeble and rapid, attended with a low febrile state of the system, the digestion imperfect, the face and lips pale. From the minute quantity of iron present, the water will peculiarly suit those of nervous temperament, above sketched; in conjunction, occasionally, with the local application of a few leeches.

A disordered state termed *Irritable womb*, is another of the maladies peculiar to females requiring treatment by chalybeates. It is characterized by severe pain more or less constant, aggravated at the periodic visitation; and by the disordered condition of the system usually attending such complaints; its symptoms are stationary; it has but little disposition to advance to disorganization; it may be distinguished from inflammatory affections of the same part, by—the absence of enlargement, heat, and throbbing in the organ—the suffering being intense in proportion to the slight alteration of texture—and by the nervous temperament of the invalid. Close confinement, and rest in the supine posture, must be enjoined during the periodic dis-

charge ; purgative medicines must be avoided during the interval ; at which time, a generous diet, being as much in the open air as possible, avoiding all causes likely to aggravate or increase the malady, together with a persevering use of the waters, will prove most effectual in removing this not uncommon and very distressing complaint.

The condition of the uterine system termed FLUOR ALBUS, will derive considerable advantage from the Tunbridge chalybeate ; when connected with a debilitated state of the system, and local relaxation, of long duration, and unattended with obstructed circulation, or organic change in remote or adjacent parts. Auxiliary medical treatment will occasionally be required, together with an unstimulating and nourishing diet ; the necessary regimen being strictly followed.

When ABORTION, or STERILITY, arises from a similar state to that just noticed—local or constitutional, the Tunbridge Spa has long been celebrated for its happy effects.* It is likewise useful in cases in which debility succeeds parturition attended with excessive loss of blood ; also when

* "And I must not forget," says Dr. Rowzee, "in behalf of the women, that there is nothing better against barrenness, and to make them fruitful, if other good and fitting means, such as their several cases may require, be duly joined with the waters."

the constitutional peculiarities, marking either sex, are slowly or imperfectly developed.

In concluding my notice of affections peculiar to the female organization, it will not be superfluous to reiterate the caution required, to see well to the suitability of the chalybeate water to any particular case, before using it; I repeat, it is only in *functional* disease of the uterine system, when unattended with any appreciable alteration of tissue, from vascular excitement, or increased action leading to structural change, that the chalybeate is indicated; if a mere sequel of previous excitement—*without* a point of irritation being left behind, causing determination of fluids, and increased sensibility—the indirect debility resulting will readily admit of removal by a well-conducted course of the Spa. Exceptions to these remarks, as in the instance just mentioned—uterine irritation, requiring local depletion by leeches in conjunction with the chalybeate, if used at all—and a few others previously mentioned, very seldom occur.

I could cite many cases that have fallen under my notice during fourteen years' professional experience, in which chalybeates produced the most untoward consequences, from their injudicious application to maladies of the uterine system, requiring very different treatment; but

having dilated on this subject—as far as my limits would permit—to the extent required for detecting appropriate cases for the exhibition of chalybeates, I shall now merely observe, that I have dwelt almost exclusively on the positive indications for their use; it may be inferred, therefore, that, in conditions of the system contrary to those sketched, the water would be prejudicial; to describe the characteristic symptoms of the opposite states, would be inconsistent with my object, and totally incompatible with the limited extent of this little work.

I next proceed to notice, briefly, those disorders of the digestive organs, which have been found to receive much benefit from the chalybeate water.

ATONIC DYSPEPSIA—the *functional dyspepsia* of some writers—is that form of indigestion in which the Spa is most beneficial. It arises from deficiency of nervous influence, and loss of tone in the muscular coat of the stomach. Dr. Symonds remarks that, “gentle agitation of the food, its easy solution, and gradual propulsion to the smaller end of the stomach, are the chief requisites for healthy digestion; and it is therefore obvious, that changes in the gastric secretion, and irregular contraction or weakness of the muscular coat, may, together or singly, so disturb the process as

to give rise to the symptoms of dyspepsia. One of the most likely circumstances to produce deficiency of the gastric juice, is an *anæmial* condition of the mucous membrane ;” which may arise, directly or indirectly, from debility. Again, deficient nervous influence, by impairing the gastric juice, plays a conspicuous part in causing indigestion ; this view is confirmed by the distressing effects of all causes tending to exhaust the nervous energy, among which mental emotions are very prominent. This form of indigestion is characterized by a languid circulation, as shewn by—pallor of the countenance—coldness over the region of the stomach—copious and pale urine—weak pulse—great depression of strength and general chilliness of the surface—the tongue being pallid, with a white thin fur, occasionally adhering to the finger when applied to it ; loss of appetite and nausea attend. Various disagreeable sensations exist in the stomach, as, heartburn and eructation after food ; the bowels being mostly confined. This form of indigestion is distinguished from indigestion, the result of a congested or inflammatory condition of the mucous membrane, more by negative than by positive characters—no increase of pain following the use of stimulants or hot drinks—the absence of pain on pressure over the stomach—the tongue not

being red, papillated, dry, or beset with small aphthous points—the absence of a harsh or scaly condition of the skin—cold drinks not particularly mitigating uneasy sensations—little disposition to eject a large quantity of mucous fluid or food *immediately* after meals: all of which symptoms, when present, denote a state of the mucous membrane of the digestive apparatus where the chalybeate would only aggravate the existing indisposition. I may here briefly notice, what may be considered a variety of atonic dyspepsia, namely, Nervous Dyspepsia, the characteristic symptoms of which have been ably pointed out by Sir J. Clark. It occurs, like atonic indigestion, in persons of nervous temperament, and is attended with many of the symptoms of the latter, but morbid sensibility of the nerves of the mucous surface of the stomach, being the most prominent condition. It is of the utmost importance to distinguish this form from the inflammatory dyspepsia above mentioned, as it requires a very different treatment, remedial and hygèianic. For brevity, I shall mention conjointly, the distinguishing characters of each, in addition to those previously stated.

IN NERVOUS DYSPEPSIA,

The symptoms are not constant, recurring occasionally without appreciable causes.

They are more affected by causes acting through the nervous system; as, mental emotions, and changes of weather.

The pulse is but little changed; occasionally it is slower than usual, and without fever.

Headach is generally preceded by coldness, creeping of the surface or numbness in the extremities; the pain being intense and throbbing, affecting one side; it is observed more on awaking in the morning, appears more frequently when the stomach is empty, than after meals; and is attended with nausea, insipid taste, and clammy tongue; long fasting, and over fatigue more frequently inducing it.

Flatulence, giddiness, noises in the ears, deafness, dimness of sight, commonly attend.

Tongue, gums, and mucous membrane of the mouth pale—seldom dry.

The urine is pale and copious.

INFLAMMATORY DYSPEPSIA,

The symptoms are more permanent.

There are greater irritability of disposition and mental despondency.

The pulse is contracted and quickened; especially after meals and towards night.

Headach is not preceded by coldness, but heat of the hands, feet, and flushing of the face; the pain being acute with a sense of distention: it often terminates by vomiting; and occurs chiefly in the evening or during the process of digestion.

Acerbity of the saliva, and more frequent thirst.

Nausea and vomiting are common.

The tongue as previously described; the gums red and spongy, and the mucous membrane of the mouth beset with small aphthous ulcers.

The eyes and eyelids are subject to inflammation.

The urine is high-coloured and turbid.

Such are the principal forms of indigestion ; but, of the above, it is only in the atonic or nervous variety that the chalybeate is admissible. Indigestion, when protracted, becomes complicated with that distemper levelling the moral with the physical world—hypochondriasis, the last expression of dyspepsia and mental prostration. It must be acknowledged, however, that the preceding distinctions are occasionally recognized with difficulty ; and, not unfrequently, cases of an intermediate nature occur—when one form is about to merge into another, or where the congested mucous membrane is directly consequent to insufficient organic nervous influence—in which the chalybeate spring will prove very beneficial, especially as the water, from its temperature, and the quantity used, may be supposed to exercise a sedative action on the slighter grades of vascular excitement or congestion.

It will be to little purpose that any single curative agent is used, if the dyspeptic do not attend most carefully to those restrictions which his case may require ; the old maxim—“ *causa cessante, effectus cessat*,” must never be lost sight of, in all matters pertaining to the causes exciting or perpetuating the malady ; and if the invalid will resolutely and perseveringly follow such a course, as shall strengthen his constitution, returning health will convince him, that ephemeral pleasures

do not for a moment admit of comparison with the abiding sense of well-being, which is alone compatible with sound digestion. I shall enumerate a few of the more common causes of dyspepsia : any circumstances tending to lower the nervous energy ; as, long illness, loss of blood, exhausting discharges of any kind, innutritious food, a damp or unwholesome atmosphere, broken rest, luxurious and indolent habits to the neglect of proper exercise ; irregularity as, to the times of taking food, its quality, and, (not least,) to the quantity ingested—

“The stomach crammed with every dish,
A tomb of roast and boiled and flesh and fish,
Where bile and wind, and phlegm and acid are,
And all the man is one intestine war.”

To these causes may be added, stimulating and purgative medicines taken with the object of counteracting erroneous diet ; the abuse of tea, coffee, or tobacco ; mental and moral causes, as, too close application to business or study, domestic chagrin, anxiety, &c. The invalid must keep regular hours ; rise early ; take sufficient exercise ; a light and nutritious diet ; employ a shower-bath of such a temperature as will insure a gentle reaction, or sponge the surface over, drying it with a coarse towel ; occasional aperients will be required. If to these means be added the

Tunbridge chalybeate, taken for a sufficient length of time, the best effects may be anticipated.

STRUMOUS DYSPEPSIA is another form well deserving of attention, as it is often a forerunner of tubercular consumption. The symptoms occur in early life. It is characterized by—a fretful disposition—irregular appetite—coated tongue, which is beset with red points at the tip and edges—tumid belly—unhealthy alvine evacuations—lassitude—flaccidity of the muscles—disposition to swelling of the tonsils, and chilblains. Here, proper medical treatment may prevent the development of that most devastating malady of our climate—pulmonary consumption; the waters will prove very beneficial, with attention to diet, &c., when the state of the alimentary canal permits.

Spasmodic Stricture of the Rectum, simulating permanent disease of the same part, is deserving of attention; it generally occurs in those of a nervous or hysterical habit, and in early life; it arises from undue excitability of the nervous system, and alternates with similar affections in other parts. The cold hip-bath, a mild diet with attention to the general health, suitable medical treatment, and a course of the mineral water, will prove serviceable.

Having now briefly noticed those disorders of the digestive organs, in which the chalybeate is particularly indicated, I may state generally, that other diseases of the abdominal viscera—engorgement of the liver, spleen, &c., or irritability of the alimentary mucous membrane, not occurring in persons of febrile or irritable temperament, will receive benefit from its use, if a course of resolvent mineral waters be used previously, as those of Ems, Carlsbad, Cheltenham, Leamington, &c.* The chalybeate may be used with advantage in alvine fluxes from debility of the mucous coat; in tendency to the formation of worms; and in passive hæmorrhage from the bowels. Sir James Clark observes—with reference to mineral waters, that “they are valuable remedies in chronic disorders of the digestive organs, and will frequently effect cures after climate and suitable regimen have failed to do more than relieve.” The remote derangements connected with affections of the organs of digestion are numerous. Sir James Clark again with truth remarks, “that, unlike many others, these affections are productive of the worst consequences at a distance from their primary seat; and when

* A good imitation of these waters may be had at Mr. Gorrings's laboratory, Parade, Tunbridge Wells. These artificial waters possess the advantage of being highly charged with carbonic acid gas—a very beneficial adjunct in all such cases.

neglected or improperly treated, they induce, sooner or later, a train of secondary disorders, which destroy the natural vigour both of the body and the mind ; and too often reduce men of the most active, of the kindest, and most enterprising characters, to the most timid, irritable, and helpless of human beings."

On reviewing the preceding sketch of the disordered states of the human constitution, it will be apparent, that they are all referable to the same condition of the system : I might mention others ; but as I have noticed somewhat in detail the general characters of the bloodless state, attended with debility, the remainder may be inferred ; as it may be considered a general rule, admitting of few exceptions, that all disorders accompanied with this depraved state, will derive benefit from the chalybeate. I shall enumerate a few more, reserving for a subsequent chapter, further notice of those to be considered in connection with the climate of Tunbridge Wells.

All that class of diseases dependant on a loss of tone in the nervous system, unattended with organic disease, and associated with the anæmic condition, as in some forms of—hysteria—epilepsy—paralysis—neuralgic affections generally—many local complaints attributable to atony of the nervous system ; exhausting perspirations ; con-

valescence from acute diseases attended with protracted debility; certain cutaneous complaints, connected with debility of the digestive organs; some forms of gravel associated with faulty chymification; in cases of chronic gout, with—pale tongue—weak pulse—blanched countenance—easily hurried breathing and palpitation of the heart on slight exertion; in dropsical affections from disease of the heart, attended with an anæmic or a cachectic state of the constitution; neuralgic affections of the heart with a similar state of the system; in all these maladies, the waters, in conjunction with other necessary measures—as a generous diet in gout, &c.—will prove very beneficial.

From the preceding pages it may be inferred in what state of the system, or in what particular disease the chalybeate water would act prejudicially. I may observe, however, that it is *contraindicated*, in persons of the sanguine temperament; or when predisposition to inflammatory disease, hectic fever, acute hæmorrhage, or apoplexy exists; also in acute diseases, those attended with febrile irritation or structural disease in any organ; in cases where an irritable condition of the heart or bloodvessels is present; when the circulating fluid is impure, or superabundant in plastic material or quantity—plethora; where congestive

or inflammatory excitement, determining to the head or chest, exists. The water must never be used when an irritable or inflammatory condition of the alimentary canal is present; of which, the tongue—having a red, livid, or glazed appearance—affords a good, though not an invariable indication. Sir James Clark justly remarks: “Before benefit can be derived from chalybeates, the digestive organs must be free from irritation, otherwise, however great may be the debility, they will generally do harm.”* The same may be said of any organ or system of the frame. I repeat—and it cannot be mentioned too often—it is in *functional* disorder alone, when the general health and strength are giving way, *unconnected with vascular excitement or change of texture*, and when the process of sanguification is *visibly* deficient, that iron is indicated.

RULES FOR THE USE OF THE CHALYBEATE
WATER.

I shall briefly notice some of the most essential circumstances to be regarded in connection with the use of the waters.

It will be advisable for the invalid, visiting Tunbridge Wells, to obtain from his medical

* On Consumption and Scrofula.

attendant, a concise and clear statement of his case; embracing, any peculiarity of constitution, the nature of the complaint, and treatment previously adopted; so that, should subsequent medical advice be required, an appropriate treatment may be expeditiously and safely adjusted.

As to the time of year most suitable for the use of the chalybeate, from May to November is the period most usually chosen, as well from the greater perfection of the spring in the interval, as from the season admitting of early rising, full advantage of the air, and sufficient exercise. There are exceptions, however: in cases, for example, in which, from a disposition to perspire, exhaustion, or liability to catch cold, would ensue from the requisite exercise being taken; also, when two courses of the water are required; in such instances, spring and autumn would be more suitable seasons.

The invalid, having fixed upon a suitable residence—a measure of considerable moment, as many parts of Tunbridge Wells vary much in respect of suitability to particular cases—should allow a few days to elapse before commencing the waters, so as to recover from any fatigue incident to travelling from a distant part.

It is indispensable in every instance, previous to the use of the waters, that the stomach and

bowels, be in a proper condition ; on this will depend, in a great measure, whether the chalybeate will prove beneficial or injurious. If the invalid should feel bilious after his journey, he will do well to take a dose of blue pill at night, followed by a saline aperient—as a Seidlitz draught—early next morning, which will remove any crudities, and place the liver, (especially when torpid,) &c., in a more favourable state for receiving full advantage from the Spa. Aperients must be used previously in every instance, and repeated occasionally, or if the bowels become confined. For those with a tendency to gastric irritation, saline aperients—Pulna water, a Seidlitz draught, Carlsbad salts, Murray's or Dinneford's solution of Magnesia—taken early in the morning, will be most suitable. In cases of Chlorosis, compound aloetic pills, at bed time, will be most appropriate. When considerable debility exists, a glassful of tepid new milk, taken half an hour previous to the water, castor oil, or confection of senna, lavements of cold or tepid water, of barley water, or thin gruel, used in the morning, will be most suitable and very beneficial : when there are, a furred tongue, heartburn, nausea, disordered bowels and turbid urine, preparatory medical treatment will be required. The addition of aperients to the water is not advisable, as

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PARADE TUNBRIDGE WELLS.

tending to disagree with the stomach, impede the absorbtion of the water, and probably to alter its chemical constitution. The stomach must be gradually accustomed to a greater quantity of liquid than usual ; a regular diet being observed, avoiding late hours and excess of any kind, all which necessary restrictions are more fully considered in the Sixth Chapter of this work.

The most appropriate time for drinking the waters is, undoubtedly, in the morning—from seven to eight o'clock. I have yet to learn why invalids at home, should not pursue the salutary practice observed at the German Spas, where the charms of Morpheus, (or, more probably, the weary and sleepless couch,) are forsaken at an early hour : at this time, both body and mind are refreshed, and the stomach empty ; moreover, from the heat not being oppressive, the necessary exercise can be taken without fatigue or other untoward consequences. As an additional inducement, I doubt not that the agreeable auxiliary of Mr. Guinness' tasteful band, would be in attendance, were such a practice to become general.

In taking a course of the waters, I should recommend that the following plan be adopted. As to the *quantity* to be taken ; this must depend on the age, sex, constitution, nature of the

complaint, and the effects produced ; the invalid must be guided also by his feelings, drinking such a quantity only as will not oppress the stomach, or impede the requisite absorption of the water. As a general rule, it may be stated that a smaller glassful is to be taken at first (about 4oz.); after which, *gentle* exercise for a quarter of an hour, on the Parade, or the Common, when the weather permits, and the walks are dry; otherwise, the sheltered walk within the Piazza will be more suitable. Exercise is very properly insisted upon, as it promotes all the good effects of the Spa ; but it must not be carried too far, especially in very nervous or delicate constitutions, for if fatigue be induced, its salutary effects will be in a great measure counteracted. At the expiration of fifteen minutes, another glassful of the water may be taken ; gentle exercise must be again enforced for half an hour or one hour ; which interval should always be allowed to elapse previous to taking breakfast or food of any kind : by this practice, the water sits lighter on the stomach, and becomes soon absorbed. When exercise proves fatiguing, the invalid had better return home in a carriage, and remain quiet until the digestion of the water is completed. The above quantity of the chalybeate is to be gradually increased after two or three days, until it amounts

to six or eight ounces, which, in most cases, will be sufficient, especially if a second course be taken at noon—a practice much to be recommended, as the effects of the chalybeate are rendered more permanent, and better borne by the stomach, than if the requisite quantity were taken on one occasion. The water should be sipped, and taken at several draughts, as its proper digestion will depend on this circumstance being attended to. But, if richly impregnated with carbonic acid gas, as by Mr. Gorrings's method, the water may be drank in large draughts, so as to retain the gas.

I have before remarked that any addition to the water, with a view to its aperient effect, should be avoided: if the cold water disagree with the stomach—as it is apt to do in cases of chlorosis, and languid constitutions, in which the stomach is much weakened—a little hot milk might be added with advantage; or the water might be raised to the temperature of the Bath waters, as suggested by Sir Charles Scudamore; by which its stimulating effects would be augmented, without materially interfering with its tonic properties. He suggests that a *thin* glass flask, filled with the water, having a small thermometer suspended in it, be immersed in boiling water, and on its attaining a temperature

of 116°, be poured out and drank. This would be more cleanly, and less likely to interfere with the activity of the chalybeate, than the practice pursued by the attendants—immersion of the water, contained in earthenware bottles, into hot water, without any definite guide as to when the required temperature is reached: this is of consequence, as we have found that above 150° degrees, the water becomes decomposed; and under this, it parts with carbonic acid gas in proportion to the elevation of temperature; which circumstances require to be estimated in adapting the water to any individual case. The water however, should be at first used at its natural temperature, in every instance; its coldness, as we have seen, often powerfully co-operating, with its other properties, to effect the salutary change in the system sought for.

The unpleasant sensations referable to the head, may be avoided, by proper attention to the stomach and bowels, as previously mentioned. It will be advisable, in many cases, to leave off taking the waters, after a fortnight's use, for a day or two; in the interim, a mild mercurial, followed by an aperient, will have a very good effect in equalizing the circulation in the digestive and associated organs. Should the circulation become excited, the warm-bath (92° to 98°),

used for twenty minutes or half an hour, at noon, will further promote a desirable equilibrium.

It will be proper for females to commence the waters *after* the periodic indisposition ; but subsequently, it may be continued through this period, if not disturbed : should it be much influenced, as to recurrence, kind, or amount, &c., the quantity of the chalybeate should be reduced to one-half or a fourth, and used warm ; or left off for a time. When suppression has long existed, if pain ensue, it will be advisable, nevertheless, to continue the waters in the usual quantity, as this is, for the most part, but a symptom of its successful action—provided the case is originally adapted for the chalybeate, as before remarked. In highly sensitive persons, with great irritability of the stomach, the waters taken in the usual way disagreeing, lavements of the same might be used with advantage, after the bowels have been evacuated.

The teeth, after taking the waters, should be well brushed with some astringent ; as tincture of myrrh, or solution of alum, mixed with water, if the gums are relaxed ; finely powdered charcoal, or chalk and camphor, may be used as an ordinary dentifrice. The toilet should be completed before breakfast, especially if the invalid has

followed the advisable practice so general at the German Spas—a morning course of the waters. Breakfast should not be taken till the stomach feels empty ; it may consist of cold toasted or fine stale bread, with very little, if any, butter ; a slice of lean mutton, or a fresh egg, boiled soft ; the drink may consist of chocolate or cocoa, with milk and sugar, but not of tea or coffee, as either decomposes the water : the drink must not exceed one breakfast-cupful, especially if the waters be taken after breakfast, as it is desirable to have the stomach as free from liquid as possible, in order to the more perfect absorption of the chalybeate. As a more detailed account of the necessary diet and regimen, to be pursued by invalids, is given in the Sixth Chapter of this volume, I shall here make only a few remarks, in addition to the above. The diet must be carefully regulated and adapted to the disorder : all fruit, and especially flatulent vegetables, should be particularly avoided while drinking the waters, as considerably aggravating the flatulence, which is an occasional inconvenience attending their use, and which proves very annoying to the dyspeptic invalid. If the water do not sit lightly on the stomach, a small cup of cocoa may be taken half an hour previously. Finally, if noon be selected for taking the

chalybeate—a practice by no means so salutary as the morning course—at least three hours should elapse from breakfast, which, in this case, should be early.

With reference to the duration of a course ; this must depend upon circumstances—its effects on the constitution, disease, &c. : as a general rule, from three to eight weeks may be stated ; or a period of six weeks, if a second course be required in the autumn. The invalid must not be discouraged, should no immediate good effects follow : as, from the minute dose of steel present, its action must be gradually evinced ; moreover, maladies which have taken a deep root in the system, require a steady and well-directed treatment, for a period proportional to the inveteracy of the disorder, and to many other circumstances not admitting of notice here. The invalid must not give up taking the chalybeate, should some unaccountable sensations arise, unless very urgent, as they mostly denote its salutary operation on the various organs of the frame ; it must not be discontinued too soon ; nor should the larger quantity be left off abruptly ; but the same order observed as at the commencement.

Thus, having bestowed that attention on the valuable chalybeate of Tunbridge Wells, which its ancient reputation deserved, I shall proceed to

consider other—by no means inferior—auxiliaries conducive to intellectual and corporeal vigour, to be found in this salubrious locality, where—

“Smiling Spring its earliest visit pays,
And parting Summer’s lingering bloom delays.”

CHAPTER III.

Geological Character of the Soil of Tunbridge Wells.

Scope for Recreation.—Evidence of the Great Wealden Denudation.—Sketch of the Chalk and Wealden Deposits.—Structure, and Geological View of the Strata of Tunbridge Wells, &c.—Probable Cause of the Undulations of Tunbridge Wells.—Advantages resulting from the Absorbent Nature of the Soil.—Necessity for Watering the Roads in dry windy Weather.—The Common, a delightful Retreat on such occasions.

To the admirer of the picturesque, the romantic, the profound in nature, few localities offer more subjects for contemplation than Tunbridge Wells, and its environs.

The gay votary of fashion, on whom the seductive influence of the “west end” has set its seal, evinced by the pallid features and languid gait, may, in a short hour or two, with the novel celerity of the present era, cast the eye over as smiling, extensive, and magnificent a prospect as man could desire; equally fitted to soothe and relieve the feelings of the wearied invalid, and

gratify the aspirations of the most imaginative of Nature's admirers. The step already becomes elastic; the eye brilliant, while "hill and dale, forest, and cultivated field, commons, woods, meadows, and corn lands, interspersed with the sober green of the hop, its beautiful foliage and pendant clusters" pass in review before the enraptured gaze; already does the sense of pleasurable existence prompt a return to a more natural mode of life, and less artificial pursuits—if, happily, the languid applicant, at the temple of Hygeia, possesses a will, stable in proportion to the correctness of his judgment. But how often is the faint resolve overcome by habits of dissipation and indulgence! Gladsome summer wanes, autumnal leaves drift before winter's chilling blasts, and, once more, the renovated votary of fashionable life, exchanges the tranquility of retired existence, for the exciting, but destructive, midnight whirl of *elite* society, with all its frivolous and deceptive attractions!

To the literary character, consuming overmuch "midnight oil," one of the "holy mounts," offers, in the calm twilight of a summer's evening, no despicable stage from whence, with thoughtful eye, to reflect upon the wonders of the illimitable expanse above, and peruse the book of nature unalloyed.

The geologist, moreover, weary with distant research, might advantageously pause a little at this peaceful spot, and, from any of the bold sandstone rocks, so conspicuous here, ponder over the extended surface, "partaking of the ever-changing, ever-varied character of the ocean. . . . undulating, irriguous, and tossed about into bold swells and deep hollows. . . . tracts of perfectly level plains, like the dead calm of the sea waters ; in others, the ground swelling gently, and almost imperceptibly, into small wave-like ridges ; some displaying abrupt, high, beetling hills, and narrow deep glens, resembling the troubled billows of the ocean, when beaten about in the fury of the storm."*

The geological observer might imagine, with no unstable foundation for the flights of fancy, some ancient Mississippi pursuing its onward and resistless course, to intermix with a capacious estuary, part of some great ocean which rivalled in grandeur and extent those now existing ; the basin of this estuary formed by the highly cultivated expanse before him.

It has been rendered probable, by the distinguished researches of Dr. Mantell, that the "Hastings beds," of which Tunbridge Wells is part, were formed of the *débris* (the only evidence) of some unknown land existing in

* Britton's Descriptive Sketches, p. 4.

former ages, carried down by a mighty river, and deposited so as to form these extensive "beds." Dr. Mantell was led to form this conclusion, from invariably finding, in the singular formation termed *Wealden*, or fresh water deposit, the organic remains of plants, shells, fishes, and reptiles of enormous size, which could only have existed in fresh water. The *Wealden* strata extend between the North and South Downs; including the Hastings beds.

In order to form some notion of these stupendous mutations upon the earth's surface, more immediately connected with our subject, we shall take a rapid glance at the various "formations," and their respective positions, alluded to.

The North Downs, a part of the "Chalk Formation," or marine beds—so called from the organic remains, consisting of sea-weeds, sponges, coral, shells, &c., discovered in its strata—extend through Surrey into Kent, terminating (escarping) in the cliffs of Dover: this extensive range of hills is named, in homely language, the "back-bone of Kent."

The South Downs, the counterpart of the former, extend from the promontory of Beachy Head to Hampshire, traversing Sussex nearly east and west, and abruptly sloping to the north.

The interval between these Northern and Southern Downs—to the north-west, was pro-

bably caused by some ancient river forcing a passage through this previously continuous chain of elevations, resembling an irregular horse-shoe. Of these, the "Chalk Formation" is principally constituted; it formed the bed of an extensive ocean; and is composed of—

Chalk, with and without flints, forming the heights at Dover and Brighton.

Grey Marl, and Upper Green Sand; the former emerging at the vale of Homesdale, &c.; the latter often absent.

Blue Marl (Galt), at Folkstone.

Lower Green Sand,* enclosing flint with green sand, and sandstone; and forming the chain of hills between the Downs and Weald.

These strata repose under each other in the order mentioned, emerging occasionally at different localities.

We next come to the "formation" more immediately connected with Tunbridge Wells—the *Wealden*.† It is remarkable as being, with the exception of the coal strata, the only known deposit forming the secondary series of rocks.

The Weald or oak-tree clay of Kent and Sussex, first emerging from under the chalk

* This is the stratum, erroneously assigned by Dr. T. Thompson (*Cyclopædia Fract. Med.*), as the source of the chalybeate of Tunbridge Wells.

† From *Wolde*, a German name for wood, from this extensive tract having been formerly densely covered with oak forests.

formation, is composed of an adhesive blue clay, enclosing beds of shelly limestone—the exuviae of a species of paludinæ. It passes, in some districts, into “Sussex marble,” of which the throne of the Archbishop of Canterbury is formed; also, a slab discovered near Chichester, in 1723, bearing an inscription, which affords the earliest evidence of the occupation of Britain by the Romans. This bed (oak-tree clay) forms the country about Tunbridge, Romney Marshes, &c.

The Sandstone beds, the most central of all, next appear; on these rests Tunbridge Wells. Its subsoil is mainly composed of ferruginous sand and friable sandstone, variously coloured from the greater or less quantity of iron ore* interposed, &c.; these enclose a coarse grained, sometimes crystalline,† sandstone; and alternate with indurated slaty clay, and bluish grey‡ sandy marl, differing in

* The iron railing surrounding St. Paul’s Cathedral, London, was obtained from the iron ore of this district. It is not now extracted, as fuel is obtained at less expense in other districts, where the ore is also found.

† The Tunbridge Wells diamond is allied to this.

‡ Mr. Richardson, of the Hastings Railway Company, kindly afforded me an opportunity of examining its varieties, which are numerous. The relative depths of the various layers, forming the subsoil of Tunbridge Wells, were found, on tunnelling through it to be,

	Feet.
Ordinary soil	1
Sand and friable sandstone	26
Clay	5
Sandrock	14
Ditto in beds, interposed with clay	14

What are termed “faults” (a breaking up of the strata) were occasionally met with.

consistence. These strata (forming hills, which vary from 100 to 800 feet in height,) are of an irregular tongue-like figure : the sides extending between the Wealds of Kent and Sussex ; the base constituting the range of cliffs from Bexhill to Winchelsea—all, the centre of the great *Wealden* denudation.

To complete this rapid sketch of the “ *Wealden formation*,” I shall enumerate the remaining beds, making up this interesting deposit.

Ashburnham beds, composed of clay, shale, and bluish grey limestone, and sandstone.

Purbeck beds, including clays, sandstones, and shelly limestones, (the Purbeck marble), limestones, with layers of mould and the remains of trees in a vertical position, (the Fossil Forest of Portland).

The fissures, extending at right angles to the anticlinal axis, form the channels by which the drainage of this deposition is effected. These four beds repose under each other in the order mentioned, the Purbeck beds being the lowest.

The fossils of the *Wealden* formation are most remarkable : Dr. Mantell mentions an instance of the bones and teeth of an immense crocodile, found near Horsham, which must have belonged to an animal from sixty to one hundred feet in length ! And he considers that the mineralized remains of ferns, some forty feet high, which could only grow in a tropical

climate, " would be mere beds of reeds," to the immense reptiles existing in long past ages of our planet. Its climate must have been tropical; and its inhabitants allied to those living at the equator.

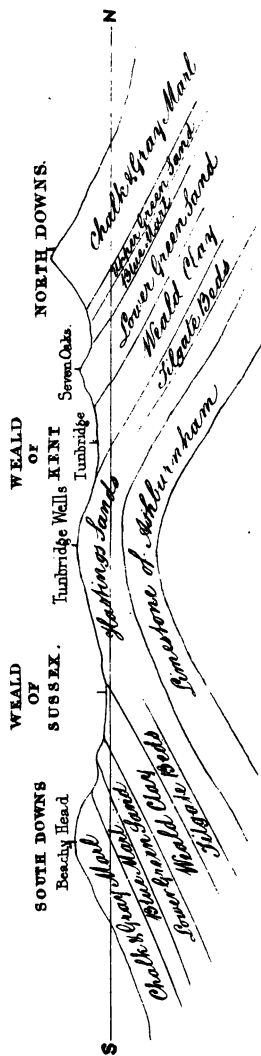
The following outline represents a perpendicular section of the Chalk and Wealden (including the Hastings and Ashburnham,) strata.

Dr. Mantell, in accounting for the undulations of Tunbridge Wells, observes: " The hills and vales around the Wells, have been produced by the displacement which the strata have suffered during their emersion from the depths of the waters. This elevation was, in all probability, not sudden, but gradual; and in the changes here contemplated, some of the highest peaks would first appear above the waves, and constitute a group of islands, which, from the accumulation of fossil fruits, &c., at Sheppy, appears to have been soon clothed with a vegetation that could not exist in our present climate. During this process valleys would be scooped out by currents, the sharp edges of the rocks rounded by diluvial action, and accumulations of *débris* be formed in the undisturbed depths of the ocean."*

The numerous advantages arising from a sub-soil of such constitution, are by no means incon-

* Britton's Descriptive Sketches.

GEOLOGICAL VIEW OF THE STRATA OF TUNBRIDGE WELLS, &c.



siderable. From its dry nature and highly absorbent qualities, any rain falling quickly disappears, especially on the more elevated situations, leaving the surface almost immediately dry : this is further secured by the shelving form of many of the walks in the neighbourhood. A subsoil of this character, preserves the atmosphere in a dry state, and free from those noxious emanations which proceed from an argillaceous and retentive soil, giving rise to some of the most fatal maladies to which the frame is exposed. At the same time, it is not so unproductive as to prevent vegetation, sufficient to be of use, in purifying and renovating the atmosphere ; by abstracting the injurious products of combustion, respiration, &c., and supplying the deficiency of oxygen arising from these processes ; by affording a cool shade during the oppressive heat of midsummer ; presenting to the view of the enfeebled invalid an almost boundless prospect of highly cultivated and verdant country, over which the eye may gladly wander without fatigue ;—a prospect strikingly contrasting with the stunted and barren vegetation characteristic of some adjacent localities resorted to by the valetudinarian. How often have I heard it remarked, that Tunbridge Wells would be rural perfection, had it—

“ The meandering river, or the glassy lake.”

But, however the imaginative, or fastidious tourist might deplore this "want of water," the invalid should recollect that the absence of rivers, lakes, or stagnant water is, in addition to its dry and cultivated soil, a further guarantee of the salubrity of Tunbridge Wells. Dr. Copland remarks, in his elaborate dictionary, that "dry, sandy, or gravelly soils, somewhat elevated above, or *removed from the mouths and banks of rivers*, and covering level, gently undulating, or moderately hilly plains, are most salubrious;"—qualities with which the geological characteristics of this locality accurately correspond.

We shall subsequently find that Tunbridge Wells, especially the more elevated part, is nearly free from fog; this immunity is partly attributable to the light colour of the soil, facilitating the radiation of heat from its surface; thus, in conjunction with its absorbent nature, and other properties to be subsequently noticed, keeping the atmosphere in that clear and elastic state, so eminently distinctive of the district.

To the invalid, susceptible of injurious impressions from a damp atmosphere and retentive subsoil, Tunbridge Wells will prove invaluable: as out-door exercise can be enjoyed almost immediately after rain; the air being seldom felt chilly, from the absence of aqueous vapour, and

little productive of noxious influence at any season ; the roads, walks, and footpaths, becoming rapidly smooth and dry ; affording also that cool and soft, yet firm support, so agreeable to the pedestrian.

“ March dust” pays an early visit to this neighbourhood ; and not unfrequently returns. However, as no sublunary blessing is unalloyed, we must rest satisfied with this otherwise healthy soil ; viewing the temporary* inconvenience as mere “ dust in the balance” of preponderating advantages. On such occasions, the sojourner at the Wells, may find a convenient and accessible retreat on the pride of the “ Garden of Kent”—the Common, with its fragrant thyme and agreeable promenades, enhanced by a landscape rarely surpassed ; where no foreign element can intrude to vitiate the exhilarating and fragrant breeze—giving life, and health, and hope, to the languid invalid who frequents this elevated plateau.

* I have been informed, on good authority, that the roads will very soon be effectually watered. This cannot be too soon accomplished for the welfare of the town.

CHAPTER IV.

Meteorological Tables—Climate.

Hygeian Sketch of Tunbridge Wells.—Thermometrical, Barometrical, and Hygrometrical Tables.—Table of Prevalent Clouds, Winds, and Weather.—Atmospheric Dryness characteristic of the Climate of Tunbridge Wells.—Importance of Meteorological Investigations.—The Laws of Climate but partially known.—The Medical Qualities of the Climate of Tunbridge Wells.—Its Great Superiority as a Summer Residence.—Proximity to Winter Resorts so Convenient.

TUNBRIDGE WELLS, situate in $51^{\circ} 7' N.$ latitude, and $0^{\circ} 17' E.$ longitude, is 35 miles (46 by rail), S.E. by S. distant from London. This ancient watering place may now be regarded as part of the environs of the Metropolis, from the facility of access afforded by the recently opened railway. The site of modern Tunbridge Wells is somewhat in conformity with that extensive chain of hills—the North and South Downs—previously noticed; the latter forming the outermost, the area of the Wells the innermost

of those hilly zones characterizing the south-east of England.

The more modern and extensive part of the town is built upon two elevated ridges ; which form the north-western and south-eastern contours of Tunbridge Wells, communicating at its northern extremity. When viewed from the railway observatory,* on Mount Pleasant, 365 feet high, the district presents a resemblance to an irregular shallow basin, its sides unequally converging towards the centre of the Wells. To the right, Mount Ephraim is seen to extend ; its aspect being S.S.E. ; this—" the west end"—overlooks the remainder of the town, and is 420 feet high,† forming the north-western limb of Tunbridge Wells. From the declivity of Mount Ephraim, and occupying an intermediate position between the two hilly ridges, is seen to project a nearly continuous range of dwellings ; it has a W.N.W. aspect, and forms, near its termination, an obtuse angle, Vale Royal, from which some detached houses extend to the Wesleyan Chapel. The aspect of this tract is S.W., and offers, from its bearing and sheltered situation, one of the best sites in Tunbridge Wells for erecting a row of dwellings adapted to pulmonary invalids : the

* This has been since removed.

† For all these measurements, referring to the height above the mean level of the sea, I am indebted to Mr. Day, of the South-Eastern Railway Company.

Common in front, terminating with sufficient abruptness to afford considerable protection from south-westerly winds ; and the ground to the rear ascending to a height sufficient to exclude easterly winds ; moreover, it has the benefit of the winter's sun.

Reverting again to the northern extremity of the town, we may trace the ridge, which, describing a semicircular figure round the Wells, and flanking it to the east and south, contributes to form another—the back entrance ; skirted on one side by Calverley Parade, looking W.N.W. It intersects a road connecting the two sides of this nearly circular district, and gradually descending, becomes continuous with the old Wells. The road of communication—Church road—is skirted on either side by commodious houses, looking nearly due south and north. Following this road, Calverley Terrace, S.S.W., is seen to the left ; next comes the “Star and Garter” of Tunbridge Wells, looking S.S.W., and commanding from its Park front a scenic display rarely met with. Further to the left, Calverley Park, 400 feet high, forming two sides of a quadrangle, is seen, with its beautifully undulating and verdant surface, flanked with detached mansions, partaking of the Italian style of architecture. Its aspect varies from S.W.

to N.W. ; the former prevailing near the Victoria Gate, the latter adjacent to the Farenborough Gate. To the rear and north of the Park, lies Calverley Promenade, S.S.E., affording a well sheltered walk in rainy weather. Finally, the extreme left wing of the Park, intersecting Grove Hill Road, becomes continuous with Grove Hill. This, 388 feet high, converging towards the old town, embraces in its sweeping course many imposing mansions, with a north-westerly aspect.

Mount Sion, 350 feet high, the last pile of buildings requiring notice from the medical observer, is situated on the sloping sides of the south-eastern ridge, before indicated. When viewed from the grand central feature of this district—the Common, Mount Sion, with its red brick dwellings, peering out of the foliage in the back ground, gives the impression of a greater tendency to centralization, than is elsewhere observable. The houses, skirting its south-western termination, are well sheltered from easterly winds, by the more elevated houses and trees in the rear ; the lowermost range of houses—Cumberland Terrace, enjoying this immunity probably more than any other situation in this locality.

I have now traced the salubrious downs of Tunbridge Wells, and rapidly sketched, from the rail-

way observatory, the objects best deserving of our attention, so as to be enabled, farther on, to point out the most suitable situations for invalids of different constitutions, and variously ailing. But I shall leave to the abler pens of descriptive tourists, or the exploring eye of visitors, to complete and duly appreciate this cheerful district, "covered nearly, yet not crowded, with houses, all gladdened with lawns, gardens, or plantations, and almost all properly and judiciously located as to *compass*, and acknowledging in the glory of its own luxuriant hills no superior hill above it, to intercept the extensive and magnificent views by which it is surrounded."* The prevailing aspect of the dwellings interspersed over these sloping downs, is from south-east to north-west, and all intermediate points (westward,) inclusive. The town is partially sheltered from north-east winds by the North Downs, and by the hilly ridge above noticed to the east and south of Tunbridge Wells; the Second and Third Divisions, subsequently distinguished, enjoying considerable immunity from these penetrating winds.

Meteorological facts will attest the truth of my observations on the sanitary advantages of Tunbridge Wells; and I am happy in being able to

* Granville's Spas of England. [This last sentence is not strictly correct; as Rumber's Hill, to the south of the Wells, being nearly 450 feet high, shuts out more distant prospects.]

give what has been always considered a desideratum—a summary deduced from an elaborate meteorological journal, kept by Aretas Akers, Esq. (now of Dover), for the Tunbridge Wells Literary and Scientific Institution, at his residence on Mount Sion.

TABLE I.

TEMPERATURE.

Shewing the Maximum, Minimum, and Mean Temperature for each month, each season, and for the whole year; deduced from four years' observations with the REGISTER THERMOMETER, from 1837 to 1840 inclusive.

*1837—1838—1839—1840.	Extreme		Mean of the Maxima.	Mean of the Minima.	Mean Temperature
	Highest.	Lowest.			
	°	°	°	°	°
January	50	14	39.2	30	34.6
February	51	21.5	43.7	33	37.8
March	54	24	46	32	39
April	66.5	25	51.7	34	42.6
May	72	28	60	40	50
June	80	38	68.5	47.7	58.1
July	77	40	69.5	49.2	59.3
August	78	39	68.8	50.5	59.6
September	71	35.5	61.7	36.2	54
October	64.5	29.5	55.5	41.5	48.5
November	56	26	47.7	36.5	42.1
December	56	03	41	33.2	37.1
Winter .....	....	....	....	....	36.5
Spring .....	....	....	....	....	43.8
Summer .....	....	....	....	....	59
Autumn .....	....	....	....	....	48.2
Annual	80	41	—	—	46.91

* These tables were derived from observations, including the excessively severe winter of 1837—38, and cold December, 1840.

TABLE II.

TEMPERATURE.

Shewing the Monthly and Annual Ranges of Temperature, the difference between the *Mean* Temperature of each month, and of each season; and the Mean Daily Range and Variation for Summer Months.

1837—1838—1839 —1840.	Range.	Difference of * Successive Months.	Difference of Successive Seasons.	
	°	°		
January	36	..3.2	Of Winter	
February	29.5	..1.1	and	
March	30	..3.6	Spring ....6.74	
April	41.5	..7.3	Of Spring	
May	44	..8.1	and	
June	42	..1.2	Summer ..15.18	
July	37	..0.3	Mean 3.9	Of Summer
August	39	..5.6		
September ...	35.5	..5.5	..6.3	and
October	35	..6.3		Autumn ..10.85
November ...	30	..5	..2.5	Of Autumn
December	33	..2.5		and
January	36			Winter ..12.20
Mean of the monthly ranges	36	Mean summer variation of suc- cessive days		Of warmest and coldest months ..25.06
Annual	66			
June mean daily	20.24	June ..3.08	Of Winter	
July “	19.62	July ..2.78	and	
Aug. “	18.1	Aug...2.98	Summer ..22.52	

* This column, relating to the first, is derived from the last column (mean temperature) of the preceding table.

TABLE III.

Atmospheric Pressure and Range for each Month, and for the whole Year : two observations daily.

1840.*	Extreme			Mean.
	Highest.	Lowest.	Range.	
January	30·18	28·75	1·43	29·550
February	30·25	28·34	1·91	29·562
March	30·33	29·50	0·83	29·923
April	30·04	29·30	0·74	29·715
May	30·05	29·09	0·96	29·566
June	29·90	29·36	0·54	29·679
July	29·90	29·20	0·70	29·584
August	29·68	29·09	0·79	29·630
September ..	26·90	28·48	1·42	29·507
October	30·28	28·88	1·40	29·645
November ..	30·13	28·58	1·55	29·382
December ..	30·28	29·10	1·18	29·784
Winter .....	....	....	....	29·632
Spring .....	....	....	....	29·734
Summer .....	....	....	....	29·631
Autumn .....	....	....	....	29·511
For the Year	30·33	28·34	1·99	29·627

* Selected so as to admit of comparison with the subsequent table, which was kept but for one year.

TABLE IV.

Shewing the difference of Wet and Dry Bulb Thermometer; the Maxima, Minima, and Mean Dew Points; and the Mean Quantities of Rain and Evaporation, in inches and parts of inches, for each month and for the whole year, at 10 A.M.

1840.	Difference of Wet and Dry Bulb.		Dew Points.			Rain in inches and decim- als.	Evapo- ration in inches.
	Greatest.	Least.	Greatest Humidity	Greatest Dryness.	Mean.		
January ..	3.0	0.1	49	21	33.5	2.070	1.001
February ..	3.5	0.3	45	19	33.24	1.262	1.364
March	7	1.5	42	20	31.06	0.500	2.045
April	11	1.5	52	29	41.26	0.050	5.258
May	12	1.	57	38	48.93	1.863	5.644
June	12	2.5	60	42	51.66	0.878	6.915
July	8	0.5	59	47	53.64	3.517	5.505
August	11	0.2	63	51	57.29	2.615	5.390
September	6	0.5	63	42	51.33	3.892	2.720
October	5.5	0.0	51	37	43.38	2.153	1.769
November..	3.0	0.0	57	27	42.16	3.684	1.602
December ..	3.0	0.0	51	28	35.35	0.220	0.793
Monthly Mean			54.08	33.41		1.892	3.333
Winter ....	..	..	..	..	..	4.552	
Spring ....	..	..	..	..	..	2.413	
Summer ..	..	..	..	..	..	6.010	
Autumn ....	..	..	..	..	..	9.729	
For the Year	—	—	63	19	43.5	22.704	40.006

TABLE V.

Showing the prevalent CLOUDS, WINDS, and WEATHER,
being a Summary and Mean of four years observations.

1837—1838 1839—1840	CLOUDS.	WINDS.										WEATHER.			
		Direction.								Force.*	Fine days.	Cloudy days	Rainy or Snowy days.	Days with Fog.	
		N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.						
															Var.
January	Cir.-st. Cu.-st. N.	1	5		2	2	9	3	5	4	1 to 10	8	4	17	2
February	Cu.-st. Cir.-st. N.	7	4	2			8	1	4	2	1 to 10	9	5	13	1
March ..	Cir.-st. Cum.-st.	2	8		3		9	6	3	1 to 8	12	6	13		
April ..	Cir.-st. Nimbus	2	7				9	1	4	7 1 to 6	14	6	10		
May	Cir.-st. Cum.-st.	1	9		1		11	6	3	2 to 7	14	7	10		
June	Cir.-st. Cu.-st. Cu.	3	1		1	1	15	1	4	4 2 to 7	11	7	12		
July	Cir.-st. Cu.-st. N.	2			1		17	3	5	3 2 to 7	11	5	15		
August ..	Cir.-st. Cu.-st. N.	2			1	1	14	2	4	7 1 to 10	15	4	12		
Sept.....	Cir.-st. N. Cum.	4			1	2	13	2	5	3 2 to 8	9	7	14		
October	Cir.-st. Cu.-st. N.	2	4	1	1		11	3	4	5 1 to 9	12	6	13		
Nov.	Cir.-st. N. Cu.-st.	1	5	1	2	2	11	1	2	5 1 to 11	8	7	14	1	
Dec.	Cir.-st. N. Stratus	1	6		4	2	8	1	6	3 1 to 6	10	11	9	1	
Winter..		2	18		10	6	25	5	15	9	27	20	39	4	
Spring ..		5	24		4		29	1	16	13	40	19	33		
Summer		3	5		2	3	46	6	13	14	37	16	39		
Autumn		3	13	2	4	4	35	6	11	13	29	20	41	1	
Annual..		13	60	2	20	13	135	18	55	49	133	75	152	5	

* This column has reference to a numerical standard of the wind's force, recommended by the Hydrographer to the Admiralty; and used on board the Great Western, &c. The scale is as follows: 0, calm; 1, light air; 2, light breeze; 3, gentle ditto; 4, moderate ditto; 5, fresh ditto; 6, strong ditto; 7, moderate gale; 8, fresh ditto; 9, strong ditto; 10, whole ditto; 11, storm; 12, hurricane. These numbers again refer to the rate of sailing, and the sails permissible.

From the preceding tables, we can form an estimate of the climate of Tunbridge Wells—so far as may be collected from the *grosser* physical properties (temperature, pressure, humidity, &c.) of its atmosphere.

But in admitting these tables as conclusive tests on the subject, it must be remembered, that they were calculated from observations made, at a height* of 350 feet above the mean level of the sea; and on the elevation—Mount Sion, the average annual temperature of which Mr. Akers considers to be *lower* than that of Mount Ephraim, or the more open parts of the Calverley estate: attributable to the vegetation being closer and thicker, and evaporation consequently more abundant in the former locality. For this reason (the lower temperature of Mount Sion), although the first table shows the annual temperature to be $46^{\circ} 9$, we may safely consider an additional degree or two required to represent the mean annual temperature of Tunbridge Wells; especially as some unpublished observations by the writer, for a shorter period, would lead to this conclusion.

We find, from the preceding tables, equability of temperature—an important circumstance in connection with climate; as the following comparative table likewise shews.

* For every 300 feet of elevation, cold increases at the rate of 1° , independent of the influence of winds, &c.

Localities.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Annual.
Env. of London	34.1	39.7	41.5	46.8	55.7	58.6	62.4	61.3	56.2	50.2	40.9	37.6	48.8
T. Wells	34.6	37.8	39	42.6	50	58.1	59.3	59.6	54	48.5	42.1	37.	46.9—48.97

With the exception of the months of April and May, in which the greatest transition of temperature occurs at Tunbridge Wells, we perceive the difference of temperature to be pretty equally distributed, relatively to the environs of London. At the latter, the mean difference of the temperature of successive months is $4^{\circ} 7$; at Tunbridge Wells only $3^{\circ} 9$. The range of heat is less than at the environs of London: the difference of the warmest and the coldest months being 25° , the mean of the monthly ranges 36° , these being—the former $28^{\circ} 2$ —the latter, 38° , at the environs of London. In steadiness of temperature, as deduced from the variation of successive days, Tunbridge Wells is not inferior to some localities of high repute, and excels many others in this important quality.

But it is in the absence of humidity, as deduced from hygrometric observations, the rain gauge, &c., that the climate of Tunbridge Wells surpasses that of most places; this we find to be

its true distinctive character and pre-eminence in the momentous element of atmospheric dryness. This quality it receives from the subsoil; moderate elevation, full exposure to the sun's rays of light, heat, &c., and consequent elevation and suspension of clouds; as well as from agencies of a more recondite nature, but little attended to by investigators of the peculiarities of climate generally:—for example, a positively electrical condition of the atmosphere (often present), predominating over a negatively electrical state, would keep it serene, and free from fog, mist, dew, &c.; from all of which, we find, on reference to the tables, (with the exception of their occasional appearance in the valley, from its less sandy soil, &c.) Tunbridge Wells to be comparatively exempt.

The same favourable (positively electrical) state of the atmosphere probably accounts for the little extent of the range of its barometrical pressure; this will be found comparatively less for the summer months than at most other localities; the Wells approaching in this important quality to that of southern climates. The diminished pressure is attributable to elevation, every thousand feet of which correspond to a fall of one inch in the mercurial column. This diminution of pressure augments evaporation; and we here find another source of the bracing properties of

the air of Tunbridge. Whether the peculiar soil of the Wells, in conjunction with other sources for the evolution of electricity abounding in this place, influences its development, might be worth investigating. But here we approach almost untrodden ground ; a subject of which little is known, though unquestionably of great importance in connection with the peculiar properties of the atmosphere, its direct influence on the human species, especially on the enfeebled invalid, and indirect agency in the production of heat, wind, and other atmospheric changes.

On referring to the fifth table, the relative prevalence of wind, and the weather, appear to partake of all the usual vicissitudes of our insular climate. It may be observed, however, that though Tunbridge Wells is built for the most part on high ground, and is not immediately sheltered from prevalent winds, yet this is effected in a great measure by the range of hills (one of which, Crowborough, ascends 804 feet,) extending across the country to the south and west, so as to break the force of, or deflect those boisterous south-westerly gales of winter, which detract much from the benefit of a more southerly residence. The extensive range constituting the North Downs, and other barriers before noticed, may also check the entrance of the easterly winds

of spring The climate of Tunbridge Wells is unquestionably much influenced by the southerly winds coming from the Atlantic ; a removal of their saline and aqueous particles being effected when passing over the dry and well cultivated district to the south of the town. These winds, thus modified, co-operate with other causes to give to the atmosphere its salubrious character. The absence of sea and land winds, as influencing the steadiness of temperature, is likewise deserving of notice.

With reference to the weather, it must be observed that, fine days include those only on which there was either bright sunshine with a cloudless sky, or at least when cloud or vapour was inconsiderable and lofty ; cloudy days comprised those in which the weather was cloudy, variable, or overcast—but without rain ; and rainy days included all days on which the most trifling fall of rain, snow, hail, &c., took place ; many being otherwise fine for the greater part of the day.

I might exemplify my statements as to the superiority of Tunbridge Wells in point of dryness, and the small amount of rain, &c. precipitated, by many comparative instances ; but my brief space necessarily limiting further detail, I shall subjoin a few only.

Names of the Places.	Annual quantity of rain in inches	Number of rainy days.	Dew points.	Evapo-ration in inches.	Periods of observation.
Tunbridge Wells	22.70	152	43°.5	40	1840
Envs. of London	24.80	178		24	20 years
Gosport.....	29.96			25	1827
Penzance	44.41	170			1821—27
Cheltenham	27.87				1837
Malvern			44°.40		
Kendall.....	55.89				1835—36

We thus find the quantity of rain falling at Tunbridge Wells, although elevated, to be much less than at other localities. It is not improbable that the range of elevations to the south and west, attracts the clouds charged from the Atlantic with aqueous vapour, thereby diverting much rain, which would be otherwise precipitated at the Wells.*

Should some persons deem meteorological investigations insipid or useless, they would do well to attend to an eloquent writer, who veritably remarks : “ If any department of science is pre-eminently distinguished in this respect,” (importance) “ it is surely meteorology—the connector, as it were, of the heavens and the earth, the regulator of life and health, the grand medium of operation for these mighty agents,”

* The geological basis of elevated or rocky districts, either attracts or repels vapour ; the peculiar subsoil of this district may possibly have the latter effect here.

(Light, Heat, Electricity, &c.) "whether they are the unerring ministry or the immediate execution of their Creator's will."

Our knowledge of the laws of climate are indeed very limited; even the effects of atmospheric phenomena on the human constitution, more immediately perceived by the sensitive invalid, are but partially understood. Many derangements of the frame arise from, or are much influenced by atmospheric conditions, which are so obscure as not to admit of intelligible expression or definite application in preventing or curing disease. I allude more particularly to the electrical state of the air, which, in reference to its influence on atmospheric mutations in general, would seem a power more simple in its nature than caloric—the most appreciable quality of climate, though possibly itself but the expression of a higher agency. We have previously traced the dryness of the atmosphere of Tunbridge Wells in part to its electrical tension; this, in its turn, is affected by atmospheric dryness, leading to an accumulation of electricity. Hence, the exciting effects of the air of this place is probably attributable—in part at least—to the system becoming more highly charged with this subtile influence.

The chemical constitution of the atmosphere

likewise, has not received that attention which its importance merits ; probably in consequence of the difficulty of estimating minute changes in its condition. Dr. Yeats was disposed to attribute the salutary operation of the air of Tunbridge Wells, to the suspension of the aroma of plants, and the presence of a hyper-carbonate of iron in the atmosphere. But, unfortunately for the latter hypothesis, chemists are acquainted with only one permanent compound of carbonic acid and the oxide of iron—the proto-carbonate, which, when brought in contact with oxygen—forming nearly a fifth part of the atmosphere—is immediately decomposed ; and consequently could never impart a lasting character to the air of the Wells. The peculiarity observable in the pure, cool, dry, electrical and highly elastic atmosphere of this district, is, in my opinion, to be ascribed chiefly to its soil ; elevation ; isolated arrangement of the dwellings and their aspects ; freedom from all sources of contamination to which large towns, and insalubrious places generally, are exposed ; and probably to other causes little admitting of explanation, from our limited acquaintance with obscure natural agencies.

From the preceding observations, we may collect (to use an expressive term, derived by an eminent physician from the physical properties

and effects of climate on the system,) "the medicinal qualities" of the air of Tunbridge Wells. We may pronounce it to be eminently invigorating, bracing even exciting, yet soft and genial: the latter quality attested by plants, indigenous to a more southerly climate, growing wild; as well as by the early appearance and general character of the vegetation, harmonizing with the mild climate of this picturesque and salubrious spot.

As a summer residence, Tunbridge Wells stands forth pre-eminent, excelling in every important property all other places equally accessible from the Metropolis. The easily reached, diversified, and highly cultivated environs—far from repelling those looking for rural attractions, by abrupt ascents or barren hillocks, thrusting forth their cheerless forms, scattered over with "short hard grass," reminding one of nature's destitution—offer ample scope for bodily and mental recreation. Few there are who can inspire the luxuriously cool and balmy air, and view the almost illimitable prospect,* adorned

* Not many localities in England can boast of such an extensive and varied expanse of country, as the view disclosed from the belfry of Frant church. Tunbridge Wells, with its gracefully sloping hills, and tastefully arranged dwellings, to the north and east; the fertile plains stretching away to the classic cliffs of Dover, to the east and south; and the romantic wooded scenery of Eridge Park, to the south and west, present, on a fine sunny day, a splendid panorama altogether unique.

with rare natural beauty, and not experience feelings of renewed health and buoyancy of spirit. Summer is the season when invalids—especially with chest affections—will derive lasting improvement to health and strength. They must lay up as it were a store of health against the inclemency of winter; a temperate atmosphere admitting of the necessary exercise being taken without risk. In order to shew the comparative coolness of Tunbridge Wells in summer, I subjoin the temperature at—

Tunbridge Wells.	London.	Cheltenham.	Paris.	Rome.
59°	62° 3	64°	64°	72°

Fortunately, the most rapid evaporation takes place at this season (see table iv.), when coolness is the chief object sought for by weakly persons: as (to use the words of Dr. Priestly), “we may be said to live out too fast when under the exciting influence of an elevated temperature.” Evaporation, again, is slowest during winter—the very season when activity of this process would be attended with inconvenience.

Those delicate invalids, returning from the southern asylums, will find Tunbridge Wells admirably adapted to give tone and vigour to the system—indeed it would appear as if this truly salubrious and bracing locality had been intended by nature as a stepping stone—perhaps an

abiding residence—between those winter resorts* and the less genial parts to the north of England. Those suffering from chest affections, to whom excess of heat or cold would be equally prejudicial, will find at this elevated region the boon of an equable temperature, and other important auxiliaries to restoration of health not previously attainable.

* Hastings must ever stand indebted to Dr. Mackness, for his able exposition of its climate. The work, embodying his graphic delineations, will serve as a trustworthy key in the application of the "CLIMATE of HASTINGS" to disease. [See HASTINGS considered as a RESORT for INVALIDS ; by James Mackness, M.D. 1842.] I take this opportunity of thanking Dr. Mackness for many useful hints received in the completion of this little work.

CHAPTER V.

*Medical Statistics of Tunbridge Wells, and the Diseases
beneficially influenced by its Climate.*

Rate of Mortality comparatively low at Tunbridge Wells.—Tables showing, Diseases of the Respiratory Organs not disproportionately prevalent; Comparative Freedom from Epidemic, Endemic, and Contagious Disorders; Certain Affections of the Nervous System rare; Diseases of the Digestive Organs relatively infrequent.—Antinervous character of the Climate of Tunbridge Wells; Favourable to Diseases of the Respiratory Organs.—Bronchocele as prevalent elsewhere.—Dyspepsia of the irritable variety, Gout, and Rheumatism in plethoric habits, not infrequent.

Necessity for Discrimination in selecting a Suitable Climate. General Indications.—Pulmonary Consumption in Torpid Habits.—Diseases of the Air Tubes, with Copious Secretions in Relaxed Habits.—Spasmodic Affections of the Respiratory Organs.—Diseases of the Heart with Neuralgia and Debility.—Nervous Disorders.—Atonic Dyspepsia, Gout, Rheumatism, and Uterine Affections in Weak and Relaxed Constitutions.—Scrofula.—“Wear and Tear” Malady.—Contra-Indications.—Superiority of Tunbridge Wells as a place of Temporary Relaxation.—Three Divisions of the Town, founded upon Elevation, Aspect, Exposure, &c.—Importance of a Judicious Selection of a Residence.—Circumstances specially Deserving of Attention.

TUNBRIDGE WELLS takes a prominent position amongst the other towns comprised in the south-

eastern division of England, the mortality of which, according to the Reports of the Registrar-General, is less than in any other part of the kingdom : being only 1.916 per cent. of the entire population annually ; that for all England being 2.209 per cent. ; and for the Metropolis 2.563 per cent. Tunbridge Wells is yet higher in the scale of exemption from fatal diseases ; notwithstanding that its bills of mortality are considerably swelled, as well by persons resorting thither in broken health, as by families of delicate constitution settling permanently in it, the absolute mortality of this town is only 1.843 per cent., or one death to 54 persons living of its entire population—one-fourth less than for the Metropolis.

The Reports of the Registrar-General, from which I have made the following deductions, are very trustworthy ; and I avail myself of them, as it is possible to arrive at more definite conclusions, with respect to the relative prevalence of fatal diseases, from such sources, than from general observation, which can never be so accurate,

A TABLE shewing the Proportion of Deaths from Fatal Diseases, in 100 deaths from all causes, in the districts named; deduced from the Annual Reports of the Registrar-General, for the quinquennial period 1838—42.

CAUSES OF DEATH:		Tunbridge	Brighton.	Dover.	Canterbury.*
Epidemic, Endemic, and Contagious Diseases		17	18	17	14
Including {	Small-pox	1.74	2.63	5.01	—
	Measles	1.14	2.17	0.71	—
	Scarlatina	3.69	3.26	0.97	—
	Hooping-cough	0.97	2.65	2.23	—
	Typhus	4.93	2.93	4.84	—
DISEASES—					
Including {	Of the Nervous System..	14	15	16	14
	Apoplexy	2.71	1.97	2.94	—
	Paralysis	0.72	1.23	1.81	—
	Convulsions	6.33	5.99	6.77	—
Including {	Of the Respiratory Organs	24	30	23	30
	Consumption	16	21	16	18
	Inflam. of the Lungs }	6.03	6.23	4.69	9.47
	“ Air tubes }				
	“ Pleura.. }				
Of the Digestive Organs		6.34	9.12	6.35	6.84

This table will give an approximation to the relative mortality of different classes of disease; and of some specific maladies in the districts mentioned.

*I have selected Canterbury with particular reference to diseases of the respiratory organs, in order to show that the results did not depend on any extrinsic addition from the reputed climate of the other towns mentioned. When remote decimals were nearly integral figures, the latter have been substituted throughout all the tables of this work, (except where collective calculations were required,) to avoid complexity.

We find the most important group, the *Respiratory*, not more—indeed rather less—prevalent than elsewhere ; it must be recollected that a minute numerical variation in such estimates, indicates considerable difference as to the number of deaths occurring in any locality.

The Epidemic, Endemic, and Contagious diseases—especially *small-pox*, *hooping-cough*, *measles*—are comparatively infrequent ; *scarlatina* and *typhus* fever (including all continued fevers) prevailing occasionally as elsewhere ; but these diseases are not disproportionately prevalent, and the rate of mortality from typhus is less at Tunbridge Wells than in the remainder of the district.

In the group of diseases of the Nervous System, *paralysis* would appear to be comparatively infrequent—nearly half less fatal than in the other districts mentioned ; the deaths by *convulsions* and *apoplexy* being nearly equal.

The mortality from diseases of the digestive organs, seems less than in any of the other districts—remarkably so relative to Brighton.

But these inferences are of less value, from presenting only a general view of the causes of death, without reference to the population of each district ; as well as from the widely differing characters—in point of salubrity—of many locali-

ties comprised in one district. In order to obviate these defects, I am enabled, through the kindness of George Graham, Esq. (Registrar-General), and Mr. Stidolph (Superintendent-Registrar of the Tunbridge district), to present the following tabular view of the Medical Statistics of Tunbridge Wells.

A TABLE, shewing, the Causes of Death at Tunbridge Wells, for the quinquennial period of 1838—42, deduced from the Local Register; the Population of this town; and the Annual Rate of Mortality to a population of 1000 living at Tunbridge Wells, and in 25 Town Districts, including London.

CAUSES OF DEATH.	Population Enumerated in 1841—1850.		Annual Mortality to 1000 living.	CAUSES OF DEATH.	Population Enumerated in 1841—1850.		Annual Mortality to 1000 living.
	Deaths in five years.	Tunbridge Wells.			Deaths in five years.	Tunbridge Wells.	
ALL CAUSES	812	18.68	27.07	<i>Of the Circulation.....</i>	12	0.29	0.42
SPECIFIED CAUSES	747			<i>Of the Digestive Organs</i>	53	1.30	1.97
<i>Zymotic (or Epidemic, Endemic, and Contagious,) Diseases.....</i>	136	3.32	6.03	Inflam. of the Intestines	25	0.61	0.66
Small-pox	18	0.43	1.04	" Peritoneum	4		
Measles	1			Mesenteric disease..	2		
Scarlatina.....	32	0.79	0.98	Ulceration	2		
Hooping-cough	9	0.21	0.82	Hernia	1		
Croup	26	0.64	0.26	Constipation (Hæus?)	3		
Diarrhœa.....	1			Disease of the Liver	5	0.12	0.20
Dysentery	1			" Spleen	1		
Influenza	1			Jaundice	2		
Ague	1			<i>Of Uncertain or Variable Seat.</i>			
Remittent Fever ..	1			Inflammation	2		
Typhus.....	35	0.85	1.25	Hæmorrhage	8		
Erysipelas	3			Dropsy.....	35		
Syphilis	1			Abscess	9		
<i>Sporadic Diseases:—</i>				Mortification	5		
<i>Of the Nervous System</i>	136	3.36	4.26	Scrofula	6		
Inflam. of the Brain	10	0.30	0.26	Cancer	7		
Water on the Brain	24	0.60	0.87	Gout	1		
Apoplexy	32	0.79	0.42	Atrophy	11		
Paralysis	6	0.16	0.36	Debility (including premature birth)	35		
Convulsions.....	49	1.12	2.00	Violent or accidental deaths	11		
Epilepsy	8	0.19	0.08	<i>Of the Organs of Generation.</i>			
Diseases of the Brain	7			Childbirth	1		
<i>Of the Respiratory Organs</i>	189	4.66	7.96	Prostatic disease.....	1		
Consumption	120	2.96	4.46	Uterine Disease	2		
Inflam. of the Lungs	49			Natural Decay	82		
" Air tubes	10	1.56	2.34				
" Pleura.....	1						
Larynx	1						
Quinsey	2						
Asthma	2	0.04	0.68	Mean Duration of Life.....		years	ysr.
						55	38

The column of mortality annexed to that of Tunbridge Wells, in this table, is taken from an abstract in the Reports of the Registrar-General before referred to.† This abstract is derived from an estimate of the relative mortality of four years—1838-1841—in country and town districts;

* The medical statistics of Tunbridge Wells are obtained with difficulty, in consequence of its being partly situated in three parishes—Tunbridge, Speldhurst, and Frant, leading to a registration of the deaths, occurring in the two last mentioned parishes, to the whole of each parish: thus making a separation impracticable. The preceding table, therefore, includes part of Speldhurst parish, in which, assuming the deaths from each cause to occur in the same relative proportion, about 18 deaths took place yearly in a population of 985—the portion *not* comprised in the so called “Local Act District” of Tunbridge Wells, which district contained, in the census of June, 1841, a population of—Tunbridge, 6053; Speldhurst, 1762; Frant, 487—8302. As the deaths occurring in the entire parish of Speldhurst are included in the above table, we may consider that it represents the mortality of Tunbridge Wells at a somewhat higher figure than belongs to it, the part entering into the “Local Act District”—chiefly Mount Ephraim—being more exempt from fatal diseases, as well from its salubrious site, as from the class of residents on this healthful plateau. The small portion of the “Local Act District” in Frant parish, again, is not included in this table; in this, about 9 deaths happen annually. It has been assumed, in calculating the rate of mortality by each cause, that the 65 deaths, occurring without the causes being assigned, were occasioned similar to the 747 deaths in which the causes were specified. It may be mentioned here, that the medical statistics, and meteorological tables, were all purposely deduced from registration and observations made at nearly the same period—the former (medical statistics) representing the deaths occurring in 1838-42; the latter (meteorological tables) denoting the temperature, &c., for the period 1837-40. With these qualifications, the preceding table may be considered to represent the mortality, &c., of Tunbridge Wells with sufficient accuracy for our present purpose.

† Derived from a Greek verb signifying, I ferment; it is used to designate the diseased action which the morbid principles communicate to the blood in those diseases.

‡ The table may be read thus:—To 1000 persons, 27.07 die annually at London, &c.; or, without decimal points, 2707 die annually to a population of 100,000.

§ Fifth Annual, Report p. 403.

and readily enables me to contrast the rate of deaths from different causes, at Tunbridge Wells and in London, &c. ; from which it will appear that the rate of mortality in general, the deaths from particular diseases, as well as the mean duration of life, are considerably in favour of Tunbridge Wells.

On referring to the first class of fatal diseases—the Zymotic—we find these nearly half less fatal—hooping cough, one-fourth—small-pox, nearly one-third—and typhus, one-third less mortal than in the City districts. Typhus (including all continued fevers, being also one-fifth less fatal in this division of the Tunbridge district) and scarlatina, which are the most fatal in this group, occur chiefly amongst the poorer classes, inhabiting the Crown Fields, the Lew, &c., many parts of which are confined, filthy, ill-ventilated—with indifferent sewerage, and abound in numerous other sources of *effluvial poisons*, productive of disease in any climate or on any soil, from which the more independent ranks are exempt.* I have observed that these diseases—fever, scarlatina—when prevalent, occur

* I have been informed by a gentleman—the principal of a highly respectable school at Tunbridge Wells—that, for a period of fourteen years, not a single case of *fever* or *scarlatina* has occurred amongst his pupils—averaging 40 in number yearly ! This speaks highly, not alone for the salubrity of this town, but also for the admirable hygeianic arrangements of that establishment, which I have inspected with the greatest satisfaction,

early in autumn, if much rain had fallen towards the latter part of summer, alternating with a hot sun and sultry weather. Croup, according to my observation, is prevalent chiefly amongst the children of the poor, living in exposed and elevated parts of the district, and occurs principally during spring, and in plethoric children. The rare occurrence of deaths from measles, and from other diseases in this class, is most remarkable, and altogether in conformity with the salubrious character of the soil, climate, &c., before noticed.

An examination of the maladies proving fatal from disease of the Nervous System, will show one-fourth less mortality at Tunbridge Wells; the deaths falling partly upon apoplexy. This is conformable with Dr. Yates' statement respecting the not infrequent occurrence of congestive diseases of the brain in robust constitutions. The cause he assigns,—the presence of iron in the water—need not be any longer in operation, from the abundant supply of excellent domestic water from the reservoirs, perfectly free from iron. My own experience would lead me to refer their increased occurrence, to the cool and dry air of this place repelling the circulation from the surface to the internal organs, principally during winter and spring; the diminished atmospheric pressure from

elevation may, likewise, interfere with the equilibrium of the circulation in persons of plethoric constitution. The disparity observable, however, is probably more specious than correct, as we find another disease—paralysis, closely connected with apoplectic affections, to be less than half as frequent at Tunbridge Wells as elsewhere ; a slight difference in the symptoms of either disease would lead to a diversity of registration ; moreover, from its reputed climate, Tunbridge Wells is liable to a considerable extrinsic addition of elderly persons affected with diseases of the Nervous System. Convulsive diseases would appear nearly half less fatal,—a fact indicative of what may be termed the *antinervous* climate of this locality. When convulsive affections occur, I have observed them to be chiefly of a congestive character, requiring depletion rather than tonics or excitants : the disparity from epilepsy probably arises from a more correct registration of the cause of death, leading to the separation of epilepsy from the indefinite group of convulsive diseases. Hydrocephalus is also less fatal ; and we find no deaths happening from the more purely functional affections—chorea, &c.—of the nervous system.

We next advert to the most important class—the Respiratory. From the mean annual temperature of Tunbridge Wells not being high, and

the more elevated parts being rather exposed, it might be supposed that diseases of the respiratory organs were prevalent. The registration of the causes of death does not by any means confirm this assumption ; but, on the contrary, shows the mortality from diseases of the respiratory organs, to be nearly one-half less than at those districts contrasted with Tunbridge Wells : thus, only 4.66 deaths occur annually to 1000 persons living in this town ; while 7.96 happen under like circumstances in London, and the other large cities—Liverpool, Manchester, Birmingham, Bath, Bristol, Clifton, &c.—comprised in this abstract. Again, the deaths from Pulmonary Consumption—by far the most fatal malady in temperate climates—Inflammation of the Lungs, Air Tubes, and Pleura, are one-third less numerous ; Asthma seventeen-times less frequently fatal, and other spasmodic affections of the respiratory organs—as spasmodic croup—not at all fatal, at Tunbridge Wells. These *facts* specially deserve attention from the more feeble inhabitants of cities, anxious to avoid an untimely grave, by resorting to a more salubrious climate ; uniting at once, vicinity to the sea without its inconvenience, and a bracing yet genial inland situation—advantages which Tunbridge Wells may justly claim.

The mortality from diseases of the Digestive

Organs appears, in the contrasted columns, to differ to a small extent only: Deaths from inflammatory affections of the intestinal canal being the most frequent, as elsewhere. I may remark, under this head, that I have noticed diarrhœa, dysentery, &c. to be prevalent in the autumnal season, chiefly confined to the poor, to whom "hopping time" is a *fruitful* season for the occurrence of intestinal affections. Diseases of the Liver appear to be half less frequently fatal.

I have now pointed out the results of most importance in the preceding tables. The remaining deaths occur principally from diseases less connected with climate, and being comparatively few in number, or of the same relative frequency, do not require particular notice, especially as the limits of this little volume totally preclude a detailed exposition of this complex subject.

Bronchocele is observed occasionally in this district; its cause is still obscure. Mr. M'Clelland's researches over 1000 square miles in the Himalaya Mountains, lead him to conclude that it is caused by drinking calcarious water. This cause is certainly inoperative at Tunbridge Wells, as the domestic water is nearly free from salts of lime. Goitre is almost exclusively confined to the female constitution, and appears to be intimately

related to the functions peculiar to the sex. Hereditary *predisposition* exists in most cases, without which the causes *exciting* goitre would probably be ineffectual. Dr. Yates remarks, that "the different mode of living of the rich may destroy the seeds of the disease which a mountainous country seems to produce." A medical friend informed me, however, he was convinced from repeated observation in Bedfordshire—in the *valle* of the Ouse, where goitre is exceedingly prevalent, that it is not invariably a disease more of *hilly* than of *flat* countries. I have observed it to be limited almost exclusively to the lower ranks in the neighbourhood of Tunbridge Wells.

The Dyspeptic complaints occurring in this district, appear, for the most part, to be connected with vascular irritation of the mucous coat of the stomach. Gouty and Rheumatic ailments, when happening, attack those chiefly of a full habit, and would seem connected with derangement of the stomach and liver, requiring, and receiving benefit from moderately antiphlogistic treatment. We shall find farther on, that these affections, occurring in cachetic habits, with little vascular fulness, derive marked improvement from a residence in this district. It is remarkable that not a single death from gout, but one, was registered during five years. Dropsical and Hæmorrhagic affections

occur incidentally ; diseases of the uropoietic organs are not common, calculous diseases rarely appearing.

Thus we find the prevalent and infrequent diseases intimately connected with the physical characters of the atmosphere, and other peculiarities of this district, the salubrity of which has been found to bear that most rigid and conclusive test—statistical examination.

I shall now proceed to notice briefly the *Diseases Beneficially Influenced by the Climate of Tunbridge Wells*.

It will be apparent, that a great variety of indispositions would derive material advantage from a residence in this healthy locality. All those maladies previously enumerated, which receive benefit from the chalybeate water are likewise beneficially influenced by a bracing air and sufficient exercise. My limited space will admit of little more than the enumeration of other affections not previously mentioned ; in some of these, though the mineral water would be prejudicial, yet such cases will experience much improvement from a temporary or permanent residence at Tunbridge Wells : as, for example, in dyspeptic and uterine complaints with loss of strength, arising from increased vascularity or

congestion in the affected organs ; but in those of plethoric habit, with rigidity of fibre, the exciting air of this place might prove irritating to the aggravation of such cases.

Chronic disorders, occurring in opposite conditions of the system, caused by difference of temperament, habit of body, superadded affections, &c. require remedial measures adapted with especial reference to these collateral circumstances. Hence it happens, that maladies classed under the same denomination, and even with analogous symptoms, will yet call for diametrically opposite treatment, a successful result attending only a correct recognition of, and measures adjusted to the varying states of the constitution. We have found this discrimination necessary in using the chalybeate water ; it is equally needful in selecting any particular locality to reside in.

Premising thus far, it may be stated generally, that a residence at Tunbridge Wells, independently of its mineral water, is adapted to persons of a lymphatic or nervous temperament, and of relaxed habit (previously noticed at page 39) : we shall find some one of those conditions to accompany all the individual diseases subsequently enumerated. As a summer residence, the Wells is very suitable in cases of debility and exhaustion, with relaxed mucous surfaces and copious

secretion ; or when the digestive, secreting, and assimilating functions generally, are imperfectly performed, and some of the abdominal organs congested or obstructed.

I shall now briefly notice individual diseases ; and first :—

PULMONARY COMPLAINTS. Consumption—occurring in torpid habits, with little susceptibility to inflammatory irritation in the mucous membranes ; in such cases, a change in summer from confined and oppressive situations, to the dry bracing air of this locality, will be attended with marked improvement, especially if the disease be not advanced beyond its early stage, and not attended with dry bronchial irritation. The direct inhalation of saline particles consequent on living close to the sea, is, by many eminent physicians, considered detrimental in certain states of this disease, some even considering it “notoriously hostile in the great majority of cases.” Although in winter there may be localities more suitable than Tunbridge Wells in point of temperature, sheltered situation, &c., still this place possesses many advantages ; the moderate dryness of the atmosphere may, in a great measure, make up for any deficiency of temperature. In connection with temperature, Mr. Farr’s observations are well deserving of attention ; he says,

“ So far as statistical investigations have hitherto gone, *temperature* appears to have no influence on the fatality of consumption.”* An inspection of the tables of mortality fully bears out this conclusion. After pointing out the excessive disproportion of deaths from consumption in town and country districts, he elsewhere† remarks : “ These facts show the propriety of the ordinary medical advice, to place persons of a consumptive habit in a pure atmosphere ; but they militate against sending them to reside in the continental towns, in many of which the mortality is as high as it is in Bethnal Green and Whitechapel. Facts point out the utility of *country* watering-places to patients affected with the complaint in cities.” Moreover, there are many parts of Tunbridge Wells sheltered to a considerable extent from northerly and easterly winds, as those comprised under the Third Division (page 134). If no irritation exists in the abdominal organs, or alimentary canal, the chalybeate water will have an eminently beneficial effect. In this disease, a change from the seaside to a salubrious inland situation, or the converse, is often attended with marked advantage ; from the proximity of Hastings to Tunbridge Wells, this may be effected without fatigue

* Third Annual Report, p. 109.

† Same Report, p. 100.

or undue exposure. As a preventive in those disposed to consumption, the air, and other advantages of the Wells, will have a very happy effect in numerous instances.

Diseases of the Windpipe and Air Tubes, attended with profuse expectoration simulating consumption, in relaxed habits; Humoral Asthma; the malady termed, "Hay Asthma," or "Summer Catarrh," in which little or no organic change has taken place, and occurring in nervous and relaxed individuals; Sympathetic Cough, termed stomach or liver cough; in all pulmonary affections of a chronic character, in which profuse expectoration is the principal source of debility, with little febrile movement, and not arising in phlogistic habits with tense fibre: in all such cases, the air of Tunbridge Wells will have an admirable effect, often producing more improvement than any other remedy.

DISEASES OF THE HEART. Nervous Palpitation, when arising in anæmic (bloodless) subjects—Dilatation of the Heart, not attended with much congestion of, or expectoration from the lungs; (taking care to keep on level ground, and to avoid ascending and descending the heights of this place.) Anginous affections, from neuralgic causes, or when attended with passive enlargement or

debility of the heart's structure : in these several affections, the air of this place will benefit much.

DISEASES OF THE NERVOUS SYSTEM—when occurring in weak subjects with flabby tissues, and great excitability, with but little power : as in Hysteria ; Epilepsy ; Chorea ; Hypochondriasis, with little gastric irritation ; Mental Despondency ; Tic Douloureux ; Neuralgic Affections generally ; Periodical Headachs, or others, in nervous subjects ; Spinal Irritation ; Paralysis, when not arising from organic disease or congestion, or when these have nearly disappeared :—in all these complaints, with the state of system above-mentioned, the air of the Wells will act most advantageously.

The air of Tunbridge Wells will prove very beneficial in :—Indigestion, occurring in torpid and relaxed habits, with little tenderness on pressure over the stomach, or other evidence of gastric irritability (see page 59). Gout, in debilitated subjects, with blanched countenance, pale and indented tongue, weak pulse, oppressed breathing and palpitation on slight exertion, the pains wandering with little disposition to settle in the extremities ; Chronic Rheumatism, not connected with gastric dyspepsia, occurring in weak and relaxed subjects, with copious perspiration and considerable debility ; nearly all uterine affections, especially

when arising in debilitated, pale, relaxed, or torpid habits. In this latter class of complaints, the invigorating air of Tunbridge Wells will admit of a much wider application than the waters, as it will produce the best effects where some degree of vascular irritation or congestion, would prohibit the use of the chalybeate waters ; in such cases, Sir J. Clark's judicious observations, in reference to change of air—"that it is "the best and often the only admissible tonic"—well apply.

Scrofulous affections generally, particularly in young subjects of lymphatic temperament, with rickets, distortion, weakness, or other diseases of the joints ; where glandular enlargements or tumid abdomen, or the peculiar derangement of the digestive organs, termed Strumous Indigestion—often the precursor of Consumption—exist. Tunbridge Wells is admirably suited for such cases, from the conjoint influence of light,—a full exposure to which the celebrated Baron Humbolt considered preventive of scrofula—its dry invigorating air ; facility of healthful exercise, without fatigue ; and the tonic operation of the chalybeate water : the latter may be used with excellent effects in such cases.

In all constitutional derangements with general debility, unattended with local disease, when the

powers of the system have been lowered—from residing in unhealthy localities, in hot climates, impure air ; from excessive mental application, or too close attention to professional or mercantile pursuits, with their attendant anxieties and perturbations : in all such cases, the restorative air of this place will produce marked improvement : if unaccompanied with febrile irritation, the use of the water may be conjoined, but not otherwise.

With reference to those states of constitution or diseases in which a permanent residence at Tunbridge Wells is less to be recommended, those contra-indicating the use of the chalybeate previously noticed (page 67) may be mentioned : but the boundary need not be so accurately defined in all these instances ; especially if the constitution is robust, sufficient exercise be taken, temperance in diet observed,—avoiding water with chalybeate impregnation,—and the alvine excretions be duly attended to. Dyspeptic affections, attended with an inflammatory condition of the stomach, with a dry tongue, and febrile state of the system; maladies of the Lungs and Air Tubes, of a dry irritable character, with little expectoration ; Consumption, occurring with these characters ; Diseases of the Heart, with a plethoric constitution and rigid fibre, as in hypertrophy ; Diseases of the Brain ; Congestive

Headachs, with a tendency to apoplectic or paralytic attacks, and when accompanied with torpid venous circulation in plethoric individuals ; Gout and Rheumatism, occurring in similar constitutions ; Uterine affections, with considerable congestion, in plethoric habits with tense fibre, with florid complexion and harsh dry skin, or when a highly exalted state of nervous sensibility exists ; Chronic inflammatory affections of the mucous canals ; Skin diseases, with dry scaly eruptions : such are the states in which the cool, exciting air of Tunbridge Wells often proves irritating to the aggravation of these maladies.

All the above briefly drawn distinctions refer chiefly to a permanent residence at this place. As a temporary residence during summer, a much wider range is allowable, in those cases in which Tunbridge Wells is found unsuitable the whole year round ; if, indeed, these distinctions may not be entirely dispensed with, as most of the maladies last enumerated will derive important advantage from a sojourn in the summer season, from its pure air and comparative coolness : as when a disposition to apoplexy or epilepsy, has appeared—in aneurism, enlargement of the heart, in congestion, or other diseases of the heart or lungs. Persons so affected should seek

the less exposed situations, found in the Second Division (page 134), and be careful to observe the dietetic and regimenal injunctions above mentioned.

To persons in ordinary health, merely resorting to this place for a change to pure air, and temporary relaxation,—probably constituting the great bulk of the visitors,—Tunbridge Wells, from its numerous advantages of invigorating air, and scope for out-door recreation, &c., scarcely admits of comparison with any locality in England.*

The following Divisions, derived from nearly four years' personal observation, and founded upon difference of elevation, aspect, exposure, &c. relate to the adaptation of particular parts of Tunbridge Wells to invalids variously indisposed, or persons of delicate constitution.

* Mr. Colbran's elaborate Guide will fully exemplify this remark.

134 DISEASES BENEFICIALLY INFLUENCED.

FIRST DIVISION.

<i>Name.</i>	<i>Aspect.*</i>	<i>Elevation.</i> Feet.	
Mount Ephraim	S.S.E.	420.00	} Very dry and bracing, a little warmer in summer, subject to a greater range of temperature. Well adapted to convalescence from acute diseases; delicate individuals with general debility; atonic —dyspepsia, gout, and rheumatism; uterine affections in lymphatic and torpid constitutions; neuralgic affections of the heart; nervous diseases in torpid and relaxed habits.
Culverden	S.E.—N.W.		
Bishop's Down	S.S.E.		
Neville Park	S.		
Top of Grove Hill Road to Farnborough Gate	N.N.E.		
Grove Hill	N.W.	388.68	
North-west Front of Mount Sion	N.W.	350	
Calverley Parade	W.N.W.	370	

SECOND DIVISION.

Oldenburg Place to Church Road inclusive W.S.W.—W.N.W.			} Bracing, invigorating, soft and genial, less exposed, not subject to considerable range of temperature. Admirably suited for pulmonary invalids, who resort thither for change of air in summer; uterine affections in highly sensitive habits; nervous disorders in very irritable constitutions, scrofulous diseases; well adapted as a summer residence for the most delicate.
Grove Hill Road	N.N.E.		
Calverley Promenade	S.S.E.		
Calverley Park—Farnborough Entrance	W.N.W.	395	
Victoria "	S.S.W.	405	
Calverley Terrace	S.S.W.		
" Hotel	S.S.W.	365	
Church Road	S.—N.		
South-western Front of Mount Sion	S.W.		

THIRD DIVISION.

Clarence Terrace	W.N.W.		} Bracing, but sheltered, the temperature less variable, the air less dry. The only suitable situation for pulmonary invalids in winter; a removal to the second division will be advisable in summer—Clarence Terrace excepted, as it approximates to this division.
Vale Royal to Wesleyan Chapel	S.W.		
Foot of Mount Sion	S.W.		
Cumberland Terrace	S.W.		
The Old Wells	N.W.	247.52	

* When any place varies in aspect or height, at different parts, the mean is given.

It is obvious that the importance of selecting a residence judiciously, cannot be too forcibly impressed upon all those who seek, in change of air, restoration of health: inattention to this essential point, may lead to disappointment, if not to worse consequences.

As a summer residence, Mount Ephraim (the principal part comprised in the First Division,) is undoubtedly preferable, especially in those cases mentioned, from its many excellencies,—its elevation, pure clear atmosphere, exemption from all fog or vapour, agreeable promenade, cool summer breeze, magnificent panoramic views, freedom from the glare of the afternoon sun, and many other unique advantages; it is more adapted for the great bulk of invalids and weakly visitors, who resort to Tunbridge Wells for its stimulating air, than any other situation; but the constitution must not be seriously weakened, or very sensitive, as the atmospheric vicissitudes of this elevated tract might prove too trying. For that class of invalids indicated in the Second Division, the parallel range of dwellings on the opposite side—Calverley Park and the adjoining terraces, &c.—will afford a safe residence—we should say pavilion, for the invalid must try to live outdoors, from sunrise to sundown, when rainy weather, or excessive heat, does not prevent. Nor let

him shrink from the glorious bath of light and sunshine, which envelopes this division with lavish profusion, in the afternoon ; the influence of full exposure to light, in restoring health and symmetrical development of form, has been recognized by the most eminent hygienic writers : Dr. J. Johnson remarks, " If we wish to etiolate men and women, we have only to congregate them in cities, where they are pretty securely kept out of the sun, and where they become as white, tender, and watery, as the finest celery ;" and I would add, debilitated, nervous, and mentally depressed in proportion.

The grateful shade of the green verandas, and dense foliage abounding here, will afford a retreat from excessive exposure.* But the invalid must shun any dwelling exuberant with trees, as tending to prevent dryness, free circulation of air, and full exposure to the rays of the sun ;—all vitally important conditions in preserving or restoring health : Sir James Clark observes, " of all the physical qualities of the air, humidity is the most injurious to human life." Part of Mount Sion, adjoining the Grove, is obnoxious to these objections ; moreover, from the miasm

* I would strongly recommend persons with sensitive eyes, to be provided with glasses of a *neutral tint*, as the reflection of light from the surface is considerable in this locality.

generated from decaying vegetation in autumn, as well as from its exposure to south-westerly winds, drift of rain, fog, smoke, &c., this part of Mount Sion cannot be recommended as an eligible situation for valetudinarians : to these objections, however, the less elevated part, and the south-western termination of Mount Sion, are but little exposed, and are well sheltered from boisterous winds.

The invalid should be careful to select lofty, large, and airy apartments, with a southern or western aspect, commanding a cheerful prospect, if possible ; it is of much importance that the bedrooms should possess these desirable qualities, as the greater part of one's time will be necessarily passed in them. Ventilation should be carefully attended to, the neglect of which is fraught with most injurious consequences. Every room should be provided with a fire place, having a good draught ; the want of this prevents thorough ventilation : but, as a substitute, the window must not be left open at night, even in hot and oppressive weather ; it is a practice replete with risk to delicate constitutions.

Finally, the invalid should select a soft, elastic, hair mattress for his bed ; this is far preferable in summer to one of feathers, from its not tending to retain heat, or confine noxious exhalations to

the surface, whereby weakening perspirations and other ill consequences are induced. He will eschew curtains, for like reasons; trusting to plenty of air and exercise as preventives from toothachs, rheums, tics, and other direful concomitants of an enfeebled nervous system.

I cannot conclude this chapter without stating, that the proprietors of dwellings and lodging-houses at Tunbridge Wells are justly entitled to commendation, for the careful observance of all necessary and desirable regulations, as to cleanliness, ventilation, &c.: in few places of resort will these matters be found better, if so well, attended to. The attention of visitors to these points, therefore, will be less needful, as the individuals alluded to would almost seem to have been educated upon hygèianic principles. Nor will the applicant for house room, unwillingly comply with the stipulated charges, when one recollects the comparatively high rents set on such houses, and the short season admitting of an equivalent for the outlay, and care expended.

CHAPTER VI.

An Outline of Hygiène.

Attention to Diet and Regimen Indispensable.—Diet; Period, Kind, and Amount of Meals; Tabular View of Dietetics.—The Domestic Water of Tunbridge Wells, its Great Purity and Freedom from Iron.—Necessity of Exercise; Great Facility for all kinds of Exercise at Tunbridge Wells; considered in relation to Time, Amount, and Kind; also, with reference to Disease, whether Functional or Structural; Exercise peculiarly beneficial when combined with Botanical, Geological, and other Pursuits.—Necessity of Avoiding Excitement, —Repose.—Bathing, its various Kinds; Maladies beneficially influenced; Directions for its Application in Doubtful Cases.—Attention to adapt Clothing to the Season necessary.—Concluding Remarks.

As this little treatise would be incomplete without some instructions to invalids, as to diet, exercise, &c., I propose, in this concluding chapter, to give a brief sketch of some of those hygèanic agents most conducive to restoration of health, in conjunction with change of air, the use of the mineral waters when admissible, &c.; upon the due observance of which, will depend, in a

great measure, whether or not this happy consummation will be attained. For let it be remembered, that those agents, though of first-rate importance in the cure or alleviation of disease, are only a part of that complex system, which the physician brings to bear in combating disease—more especially chronic maladies, which become deeply engrafted on the frame; and are alone successfully met by a well contrived, rigorously observed, and stedfastly continued course of appropriate treatment.

But, from the great extent of this subject, my remarks must be confined to a few points most deserving attention; and of these, my limited space will permit of little else than enumeration, with but few illustrative observations.

One of the most important rules to be observed, is the adoption of an appropriate DIET; this must be obvious to all: experience amply proving how considerably our bodily and mental states, especially in disease, are dependent upon the materials ingested, for the purpose of renovating, and supporting the constant changes going on in the animal economy. The instructions here given, have reference chiefly to that class of invalids of weakly constitution, using the waters, and resorting to the restorative air of Tunbridge Wells. In these, the digestive organs are more

or less deranged, according as the derangement arises, indirectly from general debility, or primarily from the manifold causes of indigestion before enumerated (page 63). This distinction is deserving of attention, as a less restricted and more generous diet may be advantageously taken, where the dyspeptic condition depends less upon local than general deviation from health. Unfortunately in these maladies, returning strength is far from being proportionate to the amount, or nutritious properties, of food or drink made use of, from the feeble digestive powers of such invalids. Still nutritious, unstimulating food, taken in quantity not creating uncomfortable sensations, is advisable, from the inability of the stomach, &c., to exert much action on ordinary food ; as well as from the low ebb at which the system has arrived, from some exhausting or depressing malady, imperatively calling for support to the fullest extent, within the limits of safety. To decide this, is a matter of no small difficulty ; in many instances, the invalid must be guided by experience, as to the kind and amount of food, &c., most suitable. To facilitate this, I shall consider, together, three essential points requiring careful attention—the *times* of taking food ; its *quality* ; and *quantity*.

As to the periods of meals ; this must have

reference to the strength of the individual, to the exercise taken, to the return of appetite, &c. It will be advisable to prolong the period of meals—as far as possible consistent with safety,—as the digestive organs become more weakened by too frequent reception of food into the stomach. Having a stated time for eating is likewise to be recommended, from the tendency to periodic return observable in the system, co-operating powerfully with the digestive organs, in the due performance of their functions.

The invalid should rise early in summer ; and if taking the mineral waters, provided the general powers be not greatly depressed, between seven and eight o'clock will be most beneficial for this purpose. Then breakfast at half-past eight or nine o'clock. But with many delicate constitutions, any active exertion before breakfast, is but ill borne ; in such cases, it will be advisable to breakfast half an hour after rising, which should not be later than eight o'clock. This may consist of white bread, a day old, toasted, (4 oz.), with little if any butter, spread on when cold ; a fresh egg boiled soft, or a thin slice of lean mutton, omitting the latter if they appear to create irritation ; one breakfast-cupful (about half a pint) of new milk, if it disagrees, half the quantity may be taken with coffee, cocoa, or lime-water ; skim-

milk is less likely to disagree, from the oily matter (to many indigestible), being removed. All new bread, cakes, (particularly when rich,) toast buttered while hot, must be especially avoided : Dodson's unfermented bread may be used with advantage, should acidity arise.

Rest must be observed for at least two hours subsequently; occupying the interval with any light pastime—drawing, music or reading, &c. ; but any *excitement*, whether from *music* or *reading*, must be *carefully shunned*. Then, supposing the chalybeate waters desirable, a forenoon course may be entered upon, as previously mentioned (page 77). Luncheon must be altogether omitted.

Dinner should be taken at half-past one or two o'clock ; an interval of four or five hours having elapsed, as the practice of taking food " little and often" is (with few exceptions) reprehensible, from its tendency to overtax the stomach, by keeping it in a constant state of excitement. Rest should precede dinner at least half an hour, as exercise, bodily or mental, to fatigue, not only counteracts the good effects of the mineral waters ; but, from impairing the digestive powers, which share with the system in all exhausting influences, it is doubly injurious. Dinner should consist of plainly cooked (well boiled or roast) butcher's meat ; as mutton, beef, of tender fibre and without fat ;

lamb, veal, or pork, should be avoided, as less nutritious and digestible; also, salt or smoked meat: venison is highly nutritious and digestible, but too stimulating for weak stomachs. The common fowl will be proper, but wild fowl and water fowl (goose, duck, &c.) must be abstained from. Fish, as whiting, sole, (boiled,) may be used, but other kinds are unsuitable for invalids: fish and vegetable food should preponderate in the diet during summer, as much animal food at this season, is apt to prove too stimulating and heating, especially in weakly individuals. It will be proper to vary these, and to take a due proportion of bread and vegetables; as, well boiled rice, mealy potatoe, turnip, asparagus, French beans, broccoli; all of which must be well boiled, and used without butter, or other indigestible addition, and in moderation, especially when taking the waters, to avoid disagreeable distention. A little rice, sago, bread, or light batter pudding, may be taken. Dessert had better be altogether omitted; if any be taken, a few ripe grapes without seed or skin, strawberries, ripe oranges, rejecting the white tissue and seeds, are the least objectionable. The drink may consist of a little toast-water, good sound well-fermented beer, with plenty of hops, if it agrees, Bass's pale ale, or a little sherry wine and water, according to circumstances.

The invalid will do well to adhere to the following quantity for dinner, as closely as possible : meat, 6oz. ; vegetables, bread, pudding, &c., not exceeding 4oz. ; drink, consisting of any of those mentioned, not exceeding 4oz.; otherwise it is most difficult to keep within due bounds. As additional guides, I may mention the advice of Dr. Beaumont—to desist when *feelings of satisfaction, ease, and quiescence of body and mind* arise, in fact, at the very time when most enjoyed ; beyond this, mal-aise will inevitably supervene. Food should be well masticated, or cut very small, and slowly swallowed. The invalid should confine himself to one plain dish, if possible, for a plurality of dishes tend to excite the appetite beyond the bounds of safety.

The quantities above mentioned will serve as a general indication ; but when individually applied, much variation may be necessary, which it is impossible to particularize in this brief outline. Returning strength will soon convince the valetudinarian, that privation and temperance are most conducive to bodily and mental health.

It may be inferred that all aliments and drinks not mentioned, are interdicted. I may state, however, that highly seasoned, fried, stewed, baked dishes ; meat heated a second time ; all rich meat ; game ; fish—as salmon, eels, salt

fish, oysters,* lobsters, crabs, shrimps—are objectionable. Heavy puddings, pies, custards, pastry, are all superlatively injurious to weak stomachs; cheese, especially new or toasted, pickles, and condiments generally (salt, mustard rarely excepted) must be shunned. Many culinary vegetables, as waxy and new potatoes, peas and beans (except when young, rejecting the skin), carrots and parsnips (from their volatile oil disagreeing with many), horse-radish and common radish, lettuce, cress, cabbage, spinach, artichoke, mushrooms, cauliflower (except the top when tender and well boiled), vegetable marrow, cucumber; most fruits, preserved or recent, especially stone fruits, as nuts of all kinds, apples, pears (least objectionable), except when roast, pine apples, figs, &c.—all must be avoided.

Of drinks: broths, soups, turtle and others, (mutton broth not fat, and chicken excepted); ardent spirits, liqueurs, heating, and strong spirituous, high-coloured, sweet, new wines; strong ale, porter, stout—all these are improper: rarely excepting a very dilute spirit made with good brandy and water, which, with many, agrees better than any other stimulant, when this is admissible.

* Though by many considered digestible, I coincide with Dr. Paris, in viewing oysters as in general likely to disagree.

I would particularly caution the invalid, especially the dyspeptic, to beware of taking food commensurate with the appetite ; it is a deceptive guide in such cases ; as the experience of an hour or two will subsequently make evident. It must be always borne in mind, that the stomach partakes with the system in the general loss of tone ; consequently it is totally inadequate to appropriate for the economy, the customary amount or kind of food.

The invalid should likewise vary his food, as much as possible, within the limits here prescribed ; as a due variety and proportion of animal and vegetable nutriment, are most conducive to perfect health : except in a few rare instances, where a diet exclusively animal or vegetable may be necessary. It must be recollected, that any excess or other indiscretion at dinner, from its being the most nutritious and substantial meal, would be most detrimental.

The interval between dinner and tea, should not be occupied with any considerable mental or corporeal exertion ; at the very earliest, two or three hours must elapse before any exercise be again taken. A cup of weak black tea or cocoa, with a little toast or biscuit, may be taken about six or seven, p.m. ; chocolate, from its oily matter,

and green tea, from its exciting effects, must not be taken. Supper will be rarely necessary; in some cases, however, when, from a feeble state of health or custom, the stomach might feel uncomfortable during the night, if empty, a little thin arrow root, gruel, or a little wine and water, with a small quantity of dry toast or biscuit, may be advantageously used before retiring to rest: this should not be later than ten o'clock.

The above instructions apply more particularly to that class of invalids of weakly constitution, with functional derangement, forming the greater number of invalids resorting to Tunbridge Wells in summer, for its strengthening waters, and invigorating air: with little modification, it will be found suitable for all such. I may observe that, from the exciting qualities of the air, the diet must be mild, and, for the most part, without stimulants; as headach of a nervous character, and other disagreeable sensations, are likely to ensue, even from the customary diet at home being adhered to.

The confirmed dyspeptic invalid must restrain himself within a yet more limited allowance of food, especially as regards its quality. I subjoin a table, illustrative of the relative digestibility of different alimentary substances, determined by Dr. Beaumont, from observations made on a young

Canadian, who had a permanent artificial opening, about two inches below the left nipple, in his stomach, from a gun-shot wound.*

Article of Diet.	Preparation.	Mean Time of Chymification	Article of Diet.	Preparation.	Mean Time of Chymification
Venison steak	broiled	H. M. 1 35	Eggs, fresh	roasted	H. M. 2 15
Mutton, fresh	boiled	3 0	Ditto, ditto	fried	3 30
Ditto ditto	roasted	3 15	Butter	melted	3 30
Ditto ditto	broiled	3 0	Custard	baked	2 45
Beef, with salt only ..	boiled	2 45	Milk	boiled	2 0
Ditto, with mustard ..	ditto	3 30	Ditto	raw	2 15
Beef steak	broiled	3 0	Cheese, old	ditto	3 30
Beef, fresh, rare	roasted	3 0	Trout, salmon, fresh	boiled	1 30
Ditto, ditto, dry	ditto	3 30	Oysters, fresh	raw	2 55
Ditto, old, hard, salted	boiled	4 15	Ditto	stewed	3 30
Turkey	ditto	2 25	Salmon, salted	boiled	4 0
Ditto	roasted	2 30	Rice	ditto	1 0
Ducks	ditto	4 0	Sago	ditto	1 45
Lamb, fresh	broiled	2 30	Beans, pod	ditto	2 30
Chicken, full grown ..	fricasseed	2 15	Carrots	ditto	3 15
Pork, fat and lean	roasted	5 15	Parsnips	ditto	2 30
Ditto, recently salted	broiled	3 15	Potatoes	roasted	2 30
Ditto, ditto	boiled	4 30	Ditto	boiled	3 30
Veal, fresh	ditto	4 0	Turnips	ditto	3 30
Ditto, ditto	fried	4 30	Bread, wheat, fresh	baked	3 30
Fowls, domestic	boiled or	4 0	Dumpling, apple ..	boiled	3 0
Eggs, whipped	roasted	4 0	Soup, beef, vegeta-		
Ditto, fresh	raw	1 30	bles, &c.	ditto	4 0
Ditto, ditto	soft boiled	3 0	Ditto, chicken	ditto	3 0
	hard ditto	3 30	Ditto, mutton	ditto	3 30

But let not the dyspeptic valetudinarian suppose for a moment, that he may revel amongst the numerous edibles here noticed ; as the individual upon whom the above experiments were made, was enjoying comparatively good health, and perfect digestion. That form of indigestion, however, which affects the invalid receiving,

* Abstracted from Dr. Pereira's Treatise on Diet, &c.

benefit from a residence at Tunbridge Wells, is of a character in which a little less stringent dietary may be observed, than would be required in the more irritable variety of dyspepsia. But still the diet must be confined within very circumscribed limits ; it should be nutritious, digestible, small in amount, and taken at regular periods ; vegetables must be for the most part excluded. Meat, bread, rice, weak black tea, warm but not hot, with little sugar or milk, should form his principal diet ; fish had better be excluded, as well as white meats. A little weak brandy and water, or old sherry, Madeira, (not exceeding one glass,) diluted with an equal quantity of water, may be taken at dinner ; or a cup of coffee will often prove a better potation.

The dyspeptic must sedulously observe all the injunctions previously given, a persevering observance of which, in conjunction with the chalybeate waters, due regulation of the digestive secretions and excretions, friction or the shower bath, exercise by walking or riding, early hours, hopeful feelings and cheerful society—all severe intellectual occupation or mental disquietude being if possible avoided,—will reward him for his patient observance of a tedious, but effectual *régime*.

Parents should be cautious in regulating the diet of children, so as not to exceed the healthful

standard : as to time, which may be a little oftener than with adults ; quantity ; and especially as to the quality of their food. A light farinaceous milk diet, with but a small proportion of animal food, will be more conducive to perfect health in the generality of delicate children, than a too stimulating diet, which is a most fruitful source of the disorders of childhood.

In concluding the subject of diet, a brief notice of the water used for domestic purposes, may not prove out of place, from its important and general application.

The opinion entertained by many, that all the water of Tunbridge Wells was impregnated with iron, has been very prevalent heretofore ; and some persons consider such to be the case at present. In order to ascertain whether or not these notions were well founded,—which, *a priori*, might be inferred from the prevalence of iron ore in the sandstone, entering so largely into the substrata of this district,— I have personally visited the springs, and corresponding reservoirs, which chiefly supply the town with water : viz., Jack's Wood spring, distributed to nearly all those places included in the First and Second Divisions (Mount Sion excepted) ; and the two springs and reservoirs* in Frant district., distributed to the

* The spring near the lower town, flows directly into the tubes conveying the water to the lower part of the town.

lower town and Mount Sion. After a careful investigation of all circumstances relating to the enquiry, and an attentive analytical examination of the respective waters, I find no reason to consider that iron exists in any quantity, appreciable by the most delicate tests, previously to leaving their sources, or subsequent to distribution. I do not subjoin an enlarged tabular statement of my (qualitative) analysis, because the results were negative of the presence of iron, the chief point to which I directed my attention. Suffice it to state, that the tests used to determine the latter, were, a solution of pure tannin, tincture of galls, and ferrocyanide of potassium, with a little dilute sulphuric acid : for conciseness I subjoin the following table, which shews at one view the results obtained.

Reagents.	Change produced in the Water from			
	Jack's Wood Spring and Reservoirs.	Frant. Springs.	Distilled Water.	Chalybeate Spring, diluted with ten parts of distilled water.
Solution of pure tannin in distilled water	none	none	none	a pale, but decided purplish black colour
Tincture of galls amber colour	very pale amber	very pale amber color	pale amber	a pale but well-marked bluish black colour
Ferrocyanide of potassium, with a little dilute sulphuric acid.	none	none	none	instantly a cerulean blue colour.

No change ensued, after forty-eight hours' exposure, in any, except a slight deposition in the chalybeate solution, which, as well as distilled water, was used for comparison or contrast. Now, it must be very evident, that tests delicate enough to detect protoxide of iron in the proportion of one forty-fourth-part of a grain, or diluting the solution eight times,—still remaining sensibly discoloured,—one three hundred and ninety-sixth-part of a grain, in a pint of water (7305grs.), or one part in nearly three million parts of water,—such tests would discover iron, if present, in the other liquids, in quantity sufficient to deserve the slightest attention. Their deportment, however, was exactly similar to that of distilled water.

The water received into the cisterns from Jack's Wood reservoirs, is equally free from ferruginous impregnation, in consequence of a coating, invented by Mr. Ward's engineer, which appears effectually to prevent the iron tubes from corrosion; and preserve the water free from foreign matter.*

* Any person would naturally hesitate to reintroduce leaden tubes at the Wells, from previous occurrences and opinions entertained here. It may be doubted, however, if they are so deleterious as is generally supposed: Dr. J. Johnson, whose opinions are deserving of the greatest deference, remarks, in writing of those whom he quaintly terms the "Plumbo-phobic Doctors," "If they were to examine the leaden tubes which conduct or raise the waters... they would find them coated internally with an amalgam, that completely defends them from the action of

The purity of the water from this source, I have been credibly informed, arises from the singular isolation of an extensive bed of adhesive clay (commonly called "velvety mould"), some fourteen feet in depth, existing in what is known as a "fault" (see page 84) in the stratafication, produced by some unexplained dislocation of the several strata composing the subsoil, leaving space for this plastic earthy deposit, which is nearly free from iron. It is said to remain pure and unmixed with land springs, the admixture of which, as being liable to chalybeate impregnation, is carefully guarded against. This spring affords the same supply at every season of the year.

The water is removed by the engine (when working) in little more than twenty-four hours; there is not the slightest ferruginous deposit at the bottom of the basin, which is constructed of sandstone. Little more than forty-eight hours elapses from the time of its first appearance, until

the waters" (as shown by Dr. Christison). "But even if this were not the case, I will venture to aver, that all the lead which is swallowed at Harrowgate or Cheltenham, by the whole of the company in an entire season, would not poison a single individual, if it were taken at one dose. What becomes of the inhabitants of towns, who drink their water from year to year, as well as their ale and porter, after it has passed through leaden pipes?"—[See Excursions to the English Spas.] More effectual and safe conduits than those commonly used might be made by coating the iron tubes internally with tin, or zinc; it may be questionable, if the attendant financial objections counterbalance the advantage of securing water free from metallic contamination.

it is conveyed into the cisterns of all the houses it supplies ; and from the agitation and exposure it undergoes, the water is probably freed from earthy matter, and otherwise purified.

I have been informed that this water has been analysed by several chemists of high scientific attainments ;—amongst others, by Professor Brande, who found it a very pure and wholesome water. We have a further guarantee of its freedom from much saline impregnation, from the engine and pipes conveying it, remaining comparatively free from deposit. My investigation is confirmatory of this. Tincture of soap remains little acted on, mixing freely with the water, shewing the absence of much sulphates or carbonates of lime. Solution of tannin, tincture of galls, and ferrocyanide of potassium, produce no change of colour or transparency whatever. Solution of chloride of barium causes very slight opalescence, denoting its freedom from salts of sulphuric acid. With oxalate of ammonia, the water becomes slightly opaline, indicative of a trace of lime. Diacetate of lead produces a well marked turbidity, from the carbonic acid present. Nitrate of silver causes little change at first, denoting the absence of hydrochloric acid compounds ; but on standing and exposure to light, a reddish brown deposit ensues, indicative of the presence of a little organic matter.

The water from the Frant district, including the upper and lower springs, was less sensibly affected, by the reagents previously mentioned, than that of Jack's Wood spring. The water from the lower spring appears remarkably soft, and comparatively free from saline matter. But as it is partly a surface water, (more immediately dependant on the quantity of rain falling,) it is not fully sufficient to supply the lower town in summer. At this time, the higher, or Tangier spring, situated in Frant valley, is occasionally made use of; the water being pumped by means of an engine, as at Jack's Wood spring, to a reservoir constructed of sandstone, with a coating of composition; from which it is distributed, by the same tubes, to the lower town.* Though I consider the water from this source to be softer, still its liability to foreign admixture from tributary springs, and other sources, is greater during warm dry weather, than the spring supplying the upper town.

The private wells, connected with dwellings, are not so much to be depended upon, from greater liability to ferruginous impregnation. I have been informed, by the superintendent of the Tunbridge Wells and Hastings Railway, that, when

* Mr. Maddock, chemist,—to whom I am greatly indebted for much scientific information,—informed me that this spring is but seldom required.

tunneling, he has repeatedly met with these springs, imbedded in the sand-rocks, which, when broken through, invariably disclose a considerable ochreous deposit. Now, in boring for water by the Artesian method, the water obtained is chiefly, if not exclusively, derived from this sandstone, and is consequently very liable to chalybeate and saline impregnation. Hence, whenever practicable, water should be procured from the springs we have considered above, as, on the whole, more exempt from impurity.

The conclusion to which the foregoing enquiry leads, is, that the domestic water of Tunbridge Wells, supplied from the larger springs, is not only perfectly free from iron, but, in consequence of the silicious character of, and little amount of calcarious matter in the substrata, that it is a remarkably pure and salubrious beverage, admirably adapted for the various purposes it serves in the economy. In short, that excellent water may be had at Tunbridge Wells.

I regret that my remaining space will only admit of a very superficial notice of the next important adjunct in the recovery of health :—

EXERCISE. Though the benefit derivable from corporeal exertion, is recognized by the community, I doubt much if this invaluable means of restoring

and preserving health, has been appreciated to the extent its admirable effects call for.

The few remarks which I have to make on the subject, will, it is hoped, convince the invalid visitor of its importance. It cannot be too often re-iterated, that the period allotted to a sojourn in this locality, is the time for making progress in the recovery of health, and for acquiring bodily vigour, sufficient to enable the invalid to resist the trying influence of the cold of winter, and the lowering effects of disease. I will venture to affirm, that for facility and inducement for exercise, not a locality in England, or on the Continent, can excel (and few compete) with Tunbridge Wells: whether we look to its varied, picturesque, and romantic walks, rides and drives, abounding on every side, far and near, with all those features calculated to attract the eye, and engage the imagination; suited to all classes, to all kinds and gradations of invalids, —consumptive, dyspeptic, hyped, hysteric: in short, to all who seek in change of air, &c., during summer, the lost or absent jewel of mental or corporeal integrity. Here lies the true strength of Tunbridge Wells; which it will retain as long as the sons and daughters of the United Kingdom continue impressed with the necessity of healthful out-door exercise, in a

vivifying atmosphere. Exercise is as necessary to the well-being of the animal economy, as the pendulum to the motions of the time-piece; without it, the bodily and mental faculties will languish; disease, and an untimely death, will inevitably supervene. By proper observance of it, the system will regain lost power more directly than by any other means—not excepting diet; the circulation will become accelerated and equalised; the respiratory and digestive organs strengthened; glandular obstructions removed; secretions and excretions regulated or restored; the vascular, muscular, and nervous systems permanently invigorated; with mental ease and hilarity commensurate with this renovation of the frame. But like every other important hygeïanic agent, the greatest perseverance, to insure these happy effects, and a due discretion as to the time, amount, and kind of exercise to be taken, as well as regard to the nature of the malady, whether structural, or functional only, and the degree of the latter, will be necessary. A brief notice of each of these circumstances must suffice.

As to the *time* for exercise; if the invalid take the waters, exercise, as before mentioned, must be subsequently practised, except when there exists great debility; in this case, a little rest on a sofa on returning home, will be more appropriate; if

the debility be such as to prevent the individual from walking to the spring, a Bath-chair or donkey-chaise may be used. It will be proper not to take exercise early in the morning, after seven or eight p.m. in summer, sooner than two or three hours after meals, or during the oppressive midday heat : from eleven to one o'clock in the forenoon, and from five to seven in the evening, will be most suitable for the generality of invalids. The pulmonary invalid must particularly observe these directions.

The *amount* of exercise must altogether depend on the peculiarities of each case ; in very delicate and weakly subjects, it must be very gentle at first, continued only for such a time as will not exhaust the system, and repeated at short intervals.

With the less feeble, from two to four hours may be stated as a reasonable quantum ;—but all such should try to live out of doors as much as possible, as in the good old times of Beau Nash, when houses served merely as temporary abodes “for eating and sleeping.”

To the Hypochondriacal and nervous subject, I know not of any means which so effectually dissipates the morbid sensibility—making life almost a burden, as exercise carried nearly to the extent of fatigue and exhaustion. Determina-

tion and perseverance are here the grand requisites, as the immediate effects may *seem* far from being so beneficial as subsequent experience amply demonstrates. Mr. Abernethy affirmed, that he was not aware of any remedies for nervous complaints but *air* and *exercise*. Dr. James Johnson remarks: "I would recommend some of my *fair* country-women to improve the languid state of the circulation, and the delicacy of their complexions, by a system of exercise in the open air, which will give colour to their cheeks, firmness to their muscles, tone to their nerves, and energy to their minds." The less amount of exercise taken by females generally, than by those of the opposite sex, is the chief reason for scrofula, curved spine, and many other maladies attacking the former, from which the latter possess a comparative immunity.

As to the *kind* of exercise to be adopted; this must be often decided by experience; but I believe, for the majority of delicate and nervous invalids resorting to Tunbridge Wells, horse exercise deserves a decided preference; it is exactly of that kind intermediate between active (walking, &c.), and passive (in a carriage) exercise, combining the advantages of both, and avoiding the disadvantages of either. By it, the respiratory organs are brought into full play,—of

the first importance to consumptive persons ;* abdominal plethora and obstructions are removed, the digestive organs receiving special benefit and tone. But I cannot agree with Lady Seymour in recommending " assanine equitation," except to timid invalids with very feeble powers ; and I must entirely dissent from Mrs. Barbauld's assertion, that " the ass is much better than the horse to *shew off a lady* : for this reason—that *her beauty is not so likely to be eclipsed.*" No ! let not the fair equestrian fear competition with the noble animal, proudly careering, yet humbly contributing to " the glow of health, the brilliancy of complexion, which a gallop produces, nothing else imparts to a lady's cheek." This mode of exercise is further advantageous, from its admitting of the more distant rural attractions being visited and enjoyed ; fatigue, moreover, is less likely to ensue, as the amount and degree of exercise admit of better regulation. Something more than an insipid lounge, will be necessary to derive the essential advantage from exercise sought for. Some pleasing object of pursuit should, if possible, accompany exercise, as its salutary effects will be enhanced by agreeable occupation of the mind ; the numerous produc-

* The illustrious Sydenham affirmed, that horse exercise is as certain a cure for consumption as bark is for ague,

tions of nature and art abounding in this neighbourhood, will afford ample scope for choice.

The equestrian should try to obtain a docile horse, as the converse would considerably detract from this healthful mode of exercise. The invalid will avoid riding too fast, as calculated to produce perspiration, and liability to cold from subsequent chill; riding against a strong wind would be improper. The pulmonary invalid will select, in windy weather, the less exposed but delightful rides in the neighbourhood of Eridge, Frant, Bayham Abbey, &c., and avoid exposure to a strong sun.

The nervous and dyspeptic will choose the elevated table-land, forming Mount Ephraim, Rusthall, Langton, Speldhurst, Bidborough, Southborough, &c.; varying the rides will be not only agreeable but salutary. Rest, for at least half an hour, should precede meals, the invalid carefully avoiding exposure to draughts of cold air while changing the dress, especially if over heated.

Walking will form the exercise of the majority; it is well calculated to bring into action all the muscular system, and produce all the good effects from exercise previously mentioned. The very feeble had better take short and frequent walks. The invalid, with disease of the heart and lungs,

should keep on level ground, and avoid ascending and descending the many undulations forming the peculiar feature of Tunbridge Wells. A steady, but not a quick pace, variation of walks, and an agreeable companion, are to be recommended. The literary character should leave his books at home. Thick-soled shoes, and lamb's-wool stockings, will produce less fatigue in walking.

Carriage exercise will be much in requisition by elderly persons, or very feeble subjects; those in whom passive exercise is alone admissible, or where distant places are visited. But let all not included here, avoid this practice, if it be their object to regain health, as this species of exercise can never supercede active bodily exertion: an open carriage is preferable, particularly in summer.

Friction, with a flesh-brush or flannels, is another most invaluable practice, especially for those who cannot adopt more active bodily exertion: as in persons affected with organic disease of the heart, paralysis, gout, rheumatism, in sedentary occupations, &c. ; it should be practised for a quarter of an hour, morning and evening.

When the weather does not permit, the practice recommended by Mr. Abernethy, may be adopted—to walk up and down a spacious room with the windows open.

Amongst other varieties which may occasionally be used advantageously by the young, I may mention archery, fencing, throwing the quoit;—all these tend to expand the chest, and call into action the muscles of the upper portion of the body : but cricket, and all fatiguing games, must be avoided. Dancing would not be objectionable to the delicate, if carried on judiciously as to time and place. It is less necessary, however, to dwell on this mode of exercise here, as the invalid may live at Tunbridge Wells as retired from the seductive influence of public amusements, as if far removed from the Metropolis, or any fashionable watering-place ; here he will have the advantage of undisturbed seclusion, unless he should meet with some former friends or acquaintances, with whom to while away the passing hour !

Other kinds of exercise combined with amusement—perhaps I should rather say excitement, as, music, singing, reading aloud, or perusing imaginative works, call for little notice here, except to remark, that although indulged in moderation, time and weather not permitting out-door exercise, yet for the most part they are of a character little suited for the sensitive invalid ; negatively, by infringing upon what can never be superseded—active exertion in the open

air ; positively, by inducing a state of the corporeal and mental constitution, the parent of most of these distressing maladies, characterized by undue susceptibility to otherwise salutary external influences. Moreover, the sensative valetudinarian should always remember that recovery will be progressive in proportion to the power acquired of self denial, and abstraction from morbid impressions from within. To attain command over these volcanic elements of our mental conformation, the most successful instrument will be, to leave uncultivated this brilliant but most deceptive soil, or to make it subservient to the perfection of our intellectual faculties, by those tranquil and delightful pursuits,—botany,* geology,—which combine at once the twofold advantage of healthful exercise to our physical and moral nature. The almost boundless scope for such pursuits in this locality, has been previously noticed. Dr. Mantell expresses his conviction, that “the environs of Tunbridge Wells would, with a little perseverance and diligent research, be rendered as productive as the most celebrated localities in Sussex.”

* I have much pleasure in referring the Botanist to an excellent little work, recently published by Mr. Colbran :—“The Flora of Tunbridge Wells,” which gives a full account of all the plants peculiar to this district.

In concluding our brief sketch of this all-important subject, we have to notice, in the last place, the nature of those maladies in which exercise is respectively beneficial or injurious.

It is in *functional derangements*, in which, (with very few exceptions,) a *cure* can be *really* effected, that the sanative advantages of Tunbridge Wells are most manifest; as in nearly all those affections previously enumerated, which receive benefit from the mineral waters, &c. Where the deviation from health merges into acute disease; or when, from structural change, the “*descensus—est facilis*,” exercise of an active kind would infallibly aggravate the former, or hasten the inevitable termination of the latter: as in febrile affections, inflammatory affections of the lungs, diseases of the heart and blood vessels, (dilatation, valvular disease, aneurism,) acute gout and rheumatism, hæmorrhages, in cases of acute and chronic inflammation of the alimentary canal, constituting a numerous class attended with prostration of strength. The nicest discrimination is necessary, to prevent the latter cases from being confounded with others (see page 59) of an opposite nature, but having some symptoms in common; the most marked being, great depression of the bodily powers. In such cases, exercise, if taken at all, must be very gentle, and

of a passive kind, as, in a carriage, Bath-chair, &c.

REPOSE is not less requisite to the invalid than exercise: the directions previously given as to ventilation, diet, exercise, &c., if duly observed, will insure sound repose. As a general rule, it may be stated, that sleep should not be indulged in during the day, or after meals, from its tendency to prevent this salutary restorative at the proper time; in very feeble, nervous subjects, however, half an hour's sleep after dinner may be taken; the best posture to assume will be sitting in a large arm chair, with the feet supported on a high stool. Eight hours' rest, or at most nine, will be sufficient; if indulged in for a longer period, it tends to weaken the digestive organs, and relax and enervate the nervous system.

The bed-chamber must be large, lofty, and cool; proper ventilation having been secured during the day, by keeping the windows open, unless in wet weather. Dr. Franklin's remarks should be always borne in mind, that "no outward air that may come in to you, is so unwholesome as the unchanged air, often breathed, of a close chamber.... Confined air, when saturated with perspirable matter, will not receive more, and that noxious matter must remain in our bodies, and occasion disease." It should be always

remembered, that fresh and pure air is essentially necessary for the maintenance of all the bodily and mental functions. Lighting a fire (except occasionally in winter), or keeping a light constantly burning, should be avoided. The bed clothes must be light and cool,—just sufficient to retain a moderate warmth. A little cheerful society, agreeable at all times, will powerfully contribute to sound sleep, by dispelling mental disquietude. The extremities should be warm, either naturally, or artificially by a fire, or a vigorous use of the flesh brush. The period allotted to sleep, must not be prolonged, should the invalid have passed a restless night, as nature will make up for the deficiency by sound sleep on the subsequent night. Much will also depend upon the digestive organs not being overloaded or oppressed with superabundant or improper food. And lastly, Dr. Franklin's injunctions, "to get out of bed, beat up and turn your pillow, shake the bed-clothes well, then throw the bed open, and leave it to cool," and walking about a little till cool, will, in most cases, procure a refreshing sleep.

BATHING is another important auxiliary in restoring health ; but when we reflect how extensive the surface is, on which its action is exerted, and the changes effected in the current of the circulation—either to or from the surface,

according as the bath is colder or warmer, we can readily conceive how great will be the necessity for discrimination in its application, which will be beneficial or injurious, according as the system is in a state to receive benefit or the converse. It is to the class of individuals for whom we have found this locality so advantageous, —where functional derangement alone (and this not to any great extent,) exists, that bathing, especially shower-bathing, of a proper temperature, will prove an excellent restorative, by invigorating the nervous system, increasing all the secretions, strengthening the circulation, promoting a due distribution of the blood throughout the system, thereby relieving internal congestion with debility (a frequent concomitant of nervous disorders), and by imparting a feeling of vigour and elasticity to the spirits, admirably calculated to restore health. The appearance of such symptoms as chilliness, headach, stupor or lassitude, after using the shower-bath, or any other bath, would contra-indicate its repetition. Noon is the best time for invalids to bathe ; using it every alternate day will be sufficient in most cases. The shower-bath may be used, when indicated, at first tepid (about 85° Fah.), gradually reducing the temperature till that of the atmosphere is attained,—provided none of the

above unpleasant sensations occur; should these arise, the heat of the water should be again raised to the original height, or until the monitory symptoms disappear. The feet should be put into warm water (98° Fah.); a cap should be worn on the head, and the shock received principally on the back of the neck and shoulders. Brisk friction should follow; and active exercise for half an hour subsequently, will be proper.

My limited space totally precludes an extended notice of bathing; I shall, therefore, merely subjoin a few additional remarks specially deserving of notice. When properly used, bathing acts as a valuable auxiliary: thus, the warm hip-bath (92° to 98° Fah.) is very beneficial in those uterine affections previously noticed (page 51.) In chronic gout and rheumatism, a warm bath, used from fifteen to thirty minutes, is likewise useful. In nervous maladies, scrofulous affections, generally, in predisposition to consumption, and in atonic dyspepsia, the shower-bath will have an excellent effect, not only by strengthening the system, but by obviating the liability to catch cold—often the pre-disposing cause of many fatal diseases, amongst which consumption is conspicuous.* A more limited application of

* The Bathing Establishment of Mrs. Thomas, No. 1, Calverley Promenade, is supplied with cold, warm, douche, shower, and vapour

water to the surface, will be beneficial when either the season of the year, or other circumstances, prohibits the use of the shower-bath: as by sponging the throat and upper part of the chest with water, adding a little vinegar or salt, and subsequently using brisk friction with a coarse towel. The temperature of the water must depend on the season of the year, and degree of power in the system. An excellent method of reconciling the susceptible invalid to atmospheric vicissitudes, is that suggested by Dr. J. Johnson, namely, to sponge the face, throat, &c., with hot and cold water successively. It will be advisable, however, that the water first applied be not much above the heat of the surface, the water subsequently used but a little lower; the difference of temperature being gradually increased until a well marked impression results from the application of either. In this way, sore throat, toothach, &c. likely to arise, if the extremes be at once entered upon, may be avoided. Occasional ablution of the body with tepid or cold water and soap, so as to

baths; all judiciously constructed, and supplied with suitable accommodation and attendance.

It is to be hoped that the committee of management of the chalybeate establishment, will not lose the present opportunity of constructing a limited number of chalybeate baths; the supply of water would be amply sufficient for this purpose; and the establishment rendered more extensively useful. Numerous are the cases in which iron cannot safely enter the circulation by any other channel, than through the surface.

promote the cutaneous transpiration, is not only requisite, but highly beneficial.

In conclusion, I may just add that *baths* of all kinds are improper when inflammation, congestion, or structural change exists: in doubtful cases, Dr. Johnson's advice may be advantageously followed, namely, to take a bath at the heat of the surface (90°) for ten minutes; subsequently lowering or raising the temperature, according as the warm or cold bath may be required, until that of the air, or of the blood (98°), be respectively attained. The same course may be pursued with the shower-bath, &c. If those disagreeable sensations previously mentioned do not arise, no ill consequences can follow.

Invalids should bestow special care on their *clothing*, so as to adapt it to atmospheric mutations; this will be particularly requisite at Tunbridge Wells in summer, as, from the varying elevation of its several parts, as well as from the many inducements to take exercise, the surface is exposed to a range of temperature that might prove injurious. To guard against this, it will be advisable to wear cotton next the skin: as it possesses the twofold property of slowly conducting heat to and from the system, at the same time facilitating transpiration and absorbing perspiration; thereby preventing sudden or considerable changes of temperature,—points of no

small consequence to delicate persons, especially with, or predisposed to pulmonary complaints.

The clothing must be particularly adapted to the kind and amount of exercise ; so much being worn as will protect the person from excessive heat or chill ; the feet especially should be well preserved from cold or damp. The materials should be pliable ; and as all *tight* dress is highly objectionable, moderation must be exercised. Invalids should carefully avoid being over-heated, or being exposed to draughts ; the clothing in the morning and evening should be warmer than at midday. As the greatest range of temperature at Tunbridge Wells takes place in May, it will be advisable not to make any alteration in the winter dress till the beginning or middle of June, and to resume it in September. Those who take little exercise, or of a passive kind, will require proportionally more clothing to keep the surface at an uniform temperature, and the circulation equilibrious.

Having now rapidly glanced at the most essential circumstances connected with restoration of health, it remains but to reiterate, that on a faithful and persevering observance of these hygeianic injunctions, will depend the completion of the hopeful anticipations respecting the sanative influence of Tunbridge Wells.

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A P P E N D I X.

SINCE the preceding pages were in type, the author has been induced to make an examination of the chalybeate spring to the rear of the Sussex Hotel, as it is likely to be again used. It may be premised, that the period of the year was unfavourable for its analysis, from being liable to dilution with the surface water abounding at this season; and that the water of the Sussex and Parade springs were tested in conjunction, so as to note with precision any appreciable disparity, if such existed.

The spring in question is agreeably situated in a picturesque dell, approached by a pathway winding through grounds which are very capable of tasteful arrangement. When visited on the 21st January, 1847, the temperature of the water was 45° Fahr., that of the atmosphere being 36°; it has never been known to freeze. The quantity of water yielded in a minute exceeded six pints (imperial measure); and the writer was informed that it might be much increased, were the source of the spring more freely exposed. Its specific gravity was 1.0007. The water was perfectly clear, and had a well-marked chalybeate taste; being ingested no eructation followed. When exposed for two hours to the atmosphere, at 50°, a few gas bubbles were observed adhering to the bottom and sides of the vessel;

nally proposed ; although the *bottled* water is an elegant chalybeate, the above note referred to water obtained from the Parade spring to have been aërated for consumption in the course of one or two hours. Should this be carried out, the author feels no hesitation in re-asserting the opinions previously advanced. It is to be hoped that the improvements now progressing at the Parade, will be completed by carbonating the water, at least to a partial extent ; the example of individual enterprize should stimulate the committee of management to place the spring on a footing worthy of its lengthened repute.

GLOUCESTER HOUSE,

Parade, Tunbridge Wells, April, 1847.

OPINIONS OF THE PRESS.

OPINIONS OF THE PRESS.

“ This interesting sketch of the Medical Topography of Tunbridge Wells is very much what such a work ought to be : giving a sufficiently full account of the situation, geological characters of the soil, meteorological peculiarities, and other local particulars, which it is desirable for the medical practitioner at a distance to know, before recommending a patient to undertake a journey for the purpose of going through a course of the mineral waters.

“ Tunbridge Wells has long been advantageously known as a chalybeate spa, and many testimonies to the beneficial effects of the waters are to be found scattered through the writings of the earlier medical authors. After a description of the spring, its origin, physical properties, and chemical analysis, together with its medicinal qualities, Dr. Powell proceeds to enumerate the affections in which the water is found to prove curative or otherwise serviceable. These are chiefly diseases of debility, and those connected with an anæmic state of the system—as chlorosis, some affections of the uterine system, certain forms of dyspepsia, particularly atonic and strumous dyspepsia, various nervous disorders, diseases of the heart accompanied with debility, and atonic gout. We may take this occasion to observe, that there are several forms of dropsy in which this and

other chalybeates might be resorted to with advantage more frequently than modern practice would perhaps lead us to suppose.

"These subjects are necessarily very briefly touched upon, although the author's observations are for the most part *extremely judicious*.

"It is well to mention that the spa is not recommended, as is sometimes the practice in similar publications, as a panacea for every ill flesh is heir to, but along with a clear indication of those forms of disease in which the water is likely to be beneficial, due caution is given against its employment in cases where it is not called for, or would be productive of injurious consequences."—*Provincial Medical and Surgical Journal*, Sept. 16th, 1846.

"It is well that medical practitioners should bear in mind that the railway brings within an easy distance a very efficacious chalybeate. There is a large class of cases which this is likely to benefit. Dr. Powell has prepared an interesting little work, describing the locality, detailing opinions upon the curative powers of the waters, and indicating the cases likely to be benefited by their use.

"It is strange that a spot possessing so many natural advantages should have been so often comparatively neglected, and we hope this little *brochure* will have the effect of calling attention to it."—*Medico-Chirurgical Review*, October, 1846.

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table production, and will no doubt prove acceptable and useful to those who may be desirous of becoming acquainted with the resources of Tunbridge Wells."—*Medical Times*, October, 1846.

"We are glad to hail the appearance of this work, and pleased to see one of our resident professors of the healing art give a portion of his time and attention to the very important subjects here treated of. It has long been a matter of regret, that (with the exception of Dr. Yeats,) none of our Physicians or Surgeons should have touched upon a subject so important to the visitors and residents of this place. This want is, however, now supplied, and we think well supplied, by the work of Dr. Powell, which will afford a guide to those using the waters, to the proper mode of taking them, and to the diseases for which they may be taken; and also containing some hints on the choice of situation for invalids residing here. In this little work will be found a map of information relative to Tunbridge Wells, never before offered to the public, and the subjects are treated on in a succinct and pleasing manner. Thus we have an account of the Chalybeate Spring, its history, physical properties, analysis, chemical constitution and medicinal properties; a list of Complaints benefited by the Mineral Spring, with directions for its use; meteorological tables, climate; and concluding with an account of Hygiène.

"We strongly recommend Dr. Powell's work to the visitors and residents of the place. It is neatly bound, well printed, and contains a map of Tunbridge Wells, an old view of the Springs, and a view of the Parade."—*Tunbridge Wells Looker-on*, Aug. 1846.

